

Construction Methods

SEPT. 1948

A MCGRAW-HILL PUBLICATION

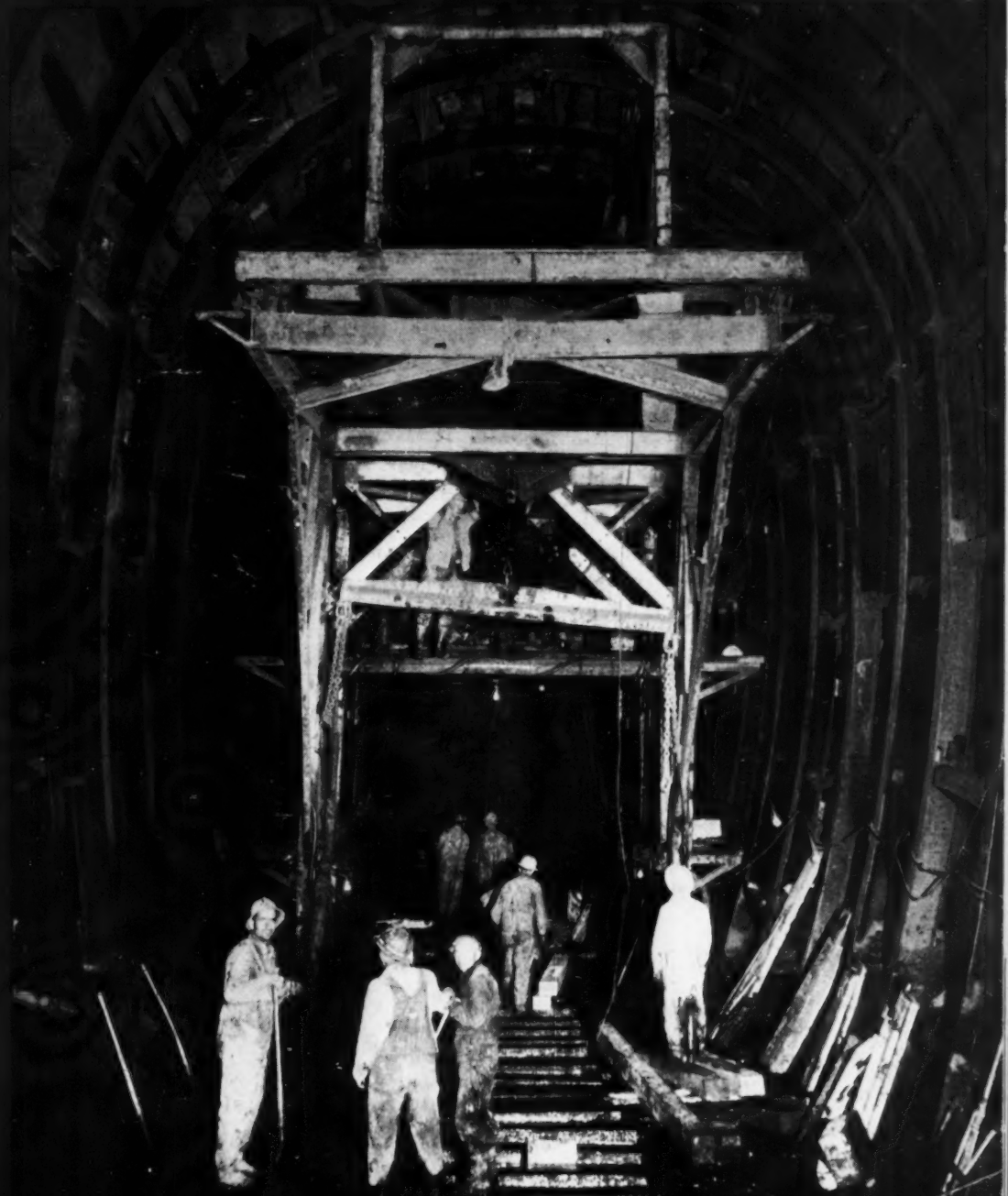
Tough Tunneling at Aspen

Air Cushion for
Premie Concrete

Precast Concrete Units
for Housing Project.

35-Acre Roof Job
Set to Fast Tempo

ough driving conditions on
Union Pacific's Aspen Tunnel
in Wyoming are being met by
lever rolling top deck on
umbo that extends over muck
pile, permitting placing of top
teel and crown bars during
mucking out cycle.





Picture of a Man
Wasting Your
MONEY!

Bending hooks in reinforcing bars is an interesting operation to watch... but an expensive one where builders are concerned. Tests made by the National Bureau of Standards have definitely proved that a *straight section* of Inland Hi-Bond provides greater anchorage than *hook anchors* made of ordinary deformed bars... that with Hi-Bond, hook anchorage

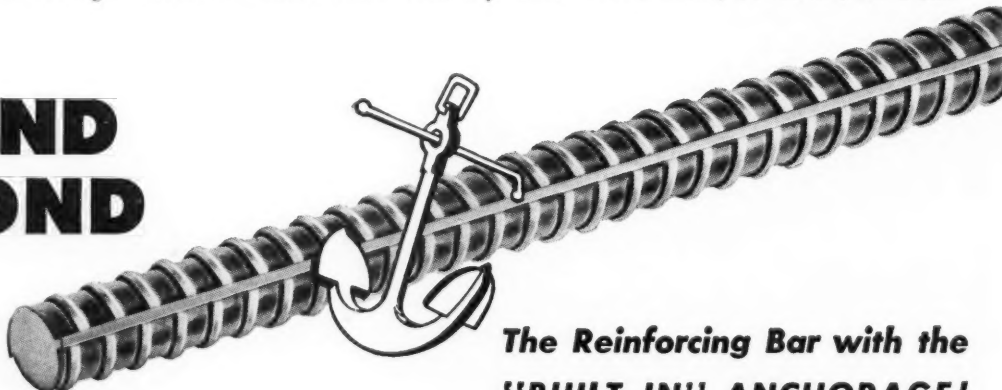
is unnecessary in most applications.

Hi-Bond's greater bonding strength is due to its deep, reversed, double-helical ribs. By preventing slipping, Hi-Bond makes it possible to transmit greater stresses from the concrete to the steel... and thus to use more of the potential strength of the steel and concrete. Hi-Bond costs no more than ordinary bars

and is less expensive to install.

To make larger tonnages available to you, we have licensed other companies to make this superior bar. Write for full information today. INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

**INLAND
HI-BOND**



**The Reinforcing Bar with the
"BUILT-IN" ANCHORAGE!**

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New York: Nelle Fitzgerald

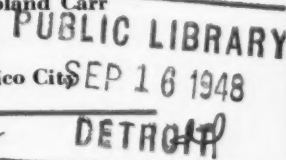
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Volume 30 SEPTEMBER 1948 Number 9

CUTS AND FILLS

CEMENT JOINS STEEL as a critical construction material. Spot and regional shortages have spread to a nation-wide shortage even though the cement industry is producing at an all-time high rate, 12 percent ahead of last year, and will turn out about 200,000,000 bbl. this year. Sustained high demand is the simple reason for the shortage. Concrete roads are 14 percent ahead of last year, streets are up 50 percent and airports are up 10 percent. Other factors are the switch in building design from critical steel to concrete, the big boost in concrete products going into housing, and resumption of big dam construction.

CUT OUT all but the most urgent of the big dam projects, say some cement men, and there will be enough cement for all the other work. Unfortunately big dam jobs can't be turned on and off like a beer spigot. There will be no relief from cement shortages until the demand drops off somewhere, for the industry has about reached the peak in increasing production through increased efficiency.

LITTLE ATTEMPT has been made in the past by contractors to keep construction workers steadily employed within the industry. Whenever a workman's services are no longer required, he is cut off the payroll with little thought of what may happen to him or how he can be kept in the work pool. To remedy this situation, members of the A. G. Constructors Association of Western Pennsylvania now issue certificates of satisfactory service, in card form, to all released employees deserving of them. These cards, when presented for employment to another member, entitles the bearer to special consideration. Good psychology and good business this is, for the worker feels that the contractors are interested in him, the prospective employer is more certain of hiring a good man, and the industry hangs on to a valuable worker.

OOPS, SORRY. Our July issue contained a

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couple of boners we are anxious to correct. For no reason on p. 85 we credited a bridge and safety marker to the West Virginia instead of the Virginia Dept. of Highways. No excuse for this one, because the item came right from headquarters at Richmond.

ANOTHER MISTAKE concerns the Houston Interurban Expressway story. The editor

covering the project understood all form hardware on the bridges was turned out by Richmond Screw Anchor. Now we are informed that the chairs welded to the beams for holding the slab forms, as shown on p. 78, were designed and furnished by Superior Concrete Accessories, Inc., Chicago. Glad to make this correction, for they are a clever form accessory.

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Model W-Speed Patrol
(see photo and description at left)

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CARTOONS DRAWN FOR

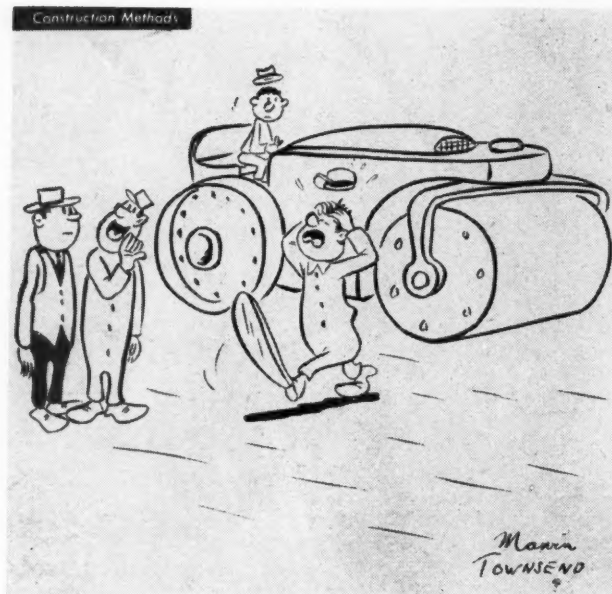
CONSTRUCTION METHODS



Construction Methods



Construction Methods



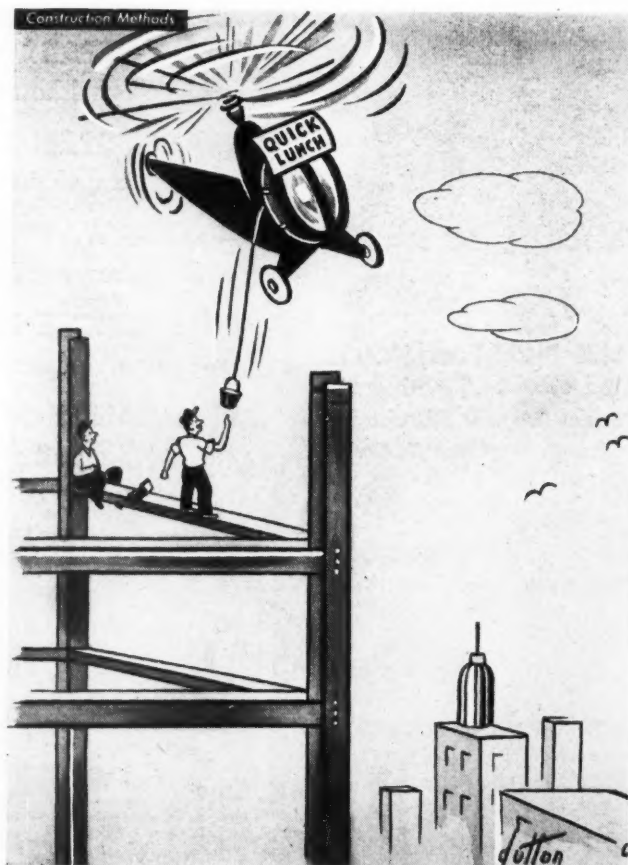
"There he goes trying to scare somebody with that trick shoe again."

Construction Methods



"He can't stand the noise!"

Construction Methods





This Concrete is 20 Years Young

**FIRST HEAVY-DUTY CONCRETE LOADING DOCK
EVER BUILT IN U. S. WITH HIGH EARLY STRENGTH PORTLAND CEMENT
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*Reg. U. S. Pat. Off.



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- 1948

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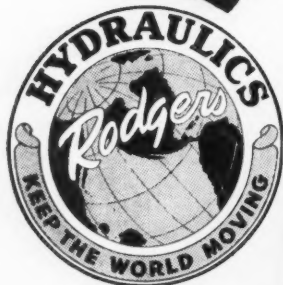


Western

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PRESSES



Custom Built ... yet
versatile in use

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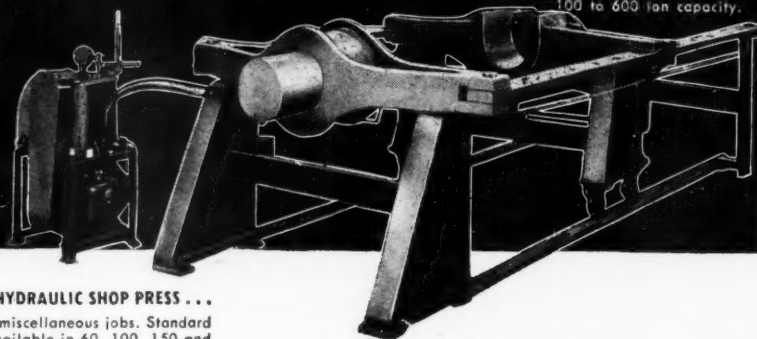
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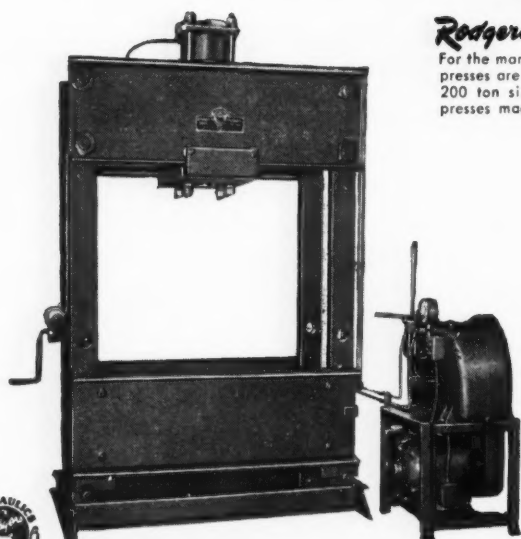
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... for
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available in
capacity.

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per load... at 10 m.p.h.**

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WITH THE**

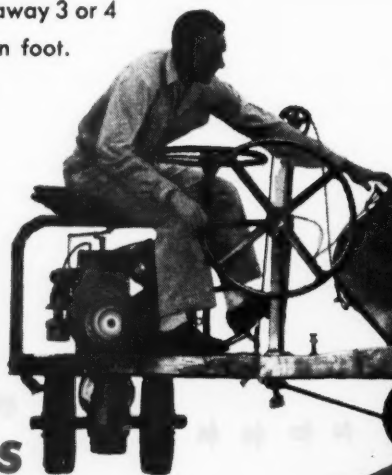
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With a 7½ H.P., standard 4-cycle gas engine built to take heavy hauling. 34 inches high... fits under most mixer chutes without blocks... takes a full load of concrete (4 to 5 wheelbarrow loads) and speeds away 3 or 4 times faster than a man on foot.

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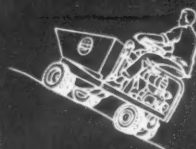


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GOES THROUGH
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20% INCLINE
WITH FULL LOAD



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WITH STAKE BODY
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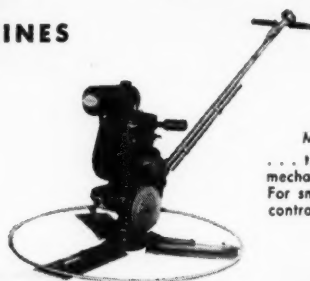
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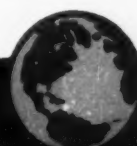
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Here's the high-speed, rubber-tired

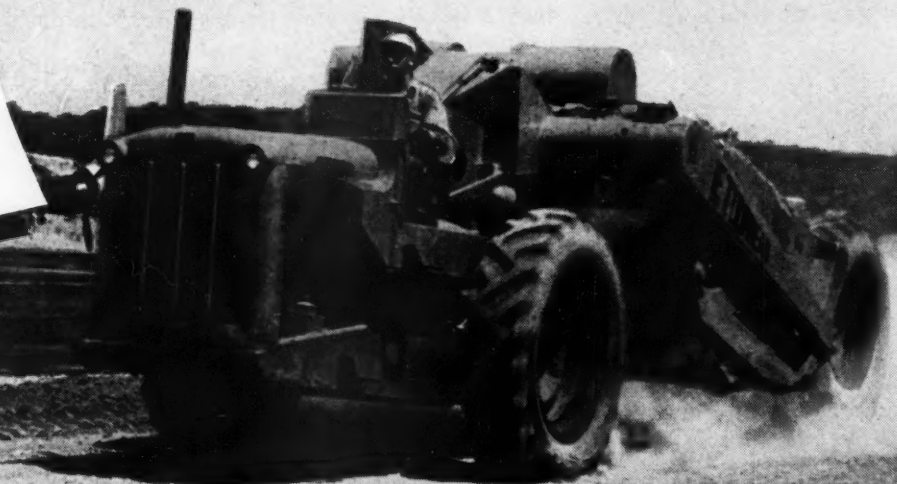
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**7 Cu. Yd.
(9 TON) capacity**



**Speeds to
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of Carryall tires, 5' 11"
- ✓ Width cutting edge 7' 0"
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- ✓ Weighs approx. 20,700 lbs.

C97

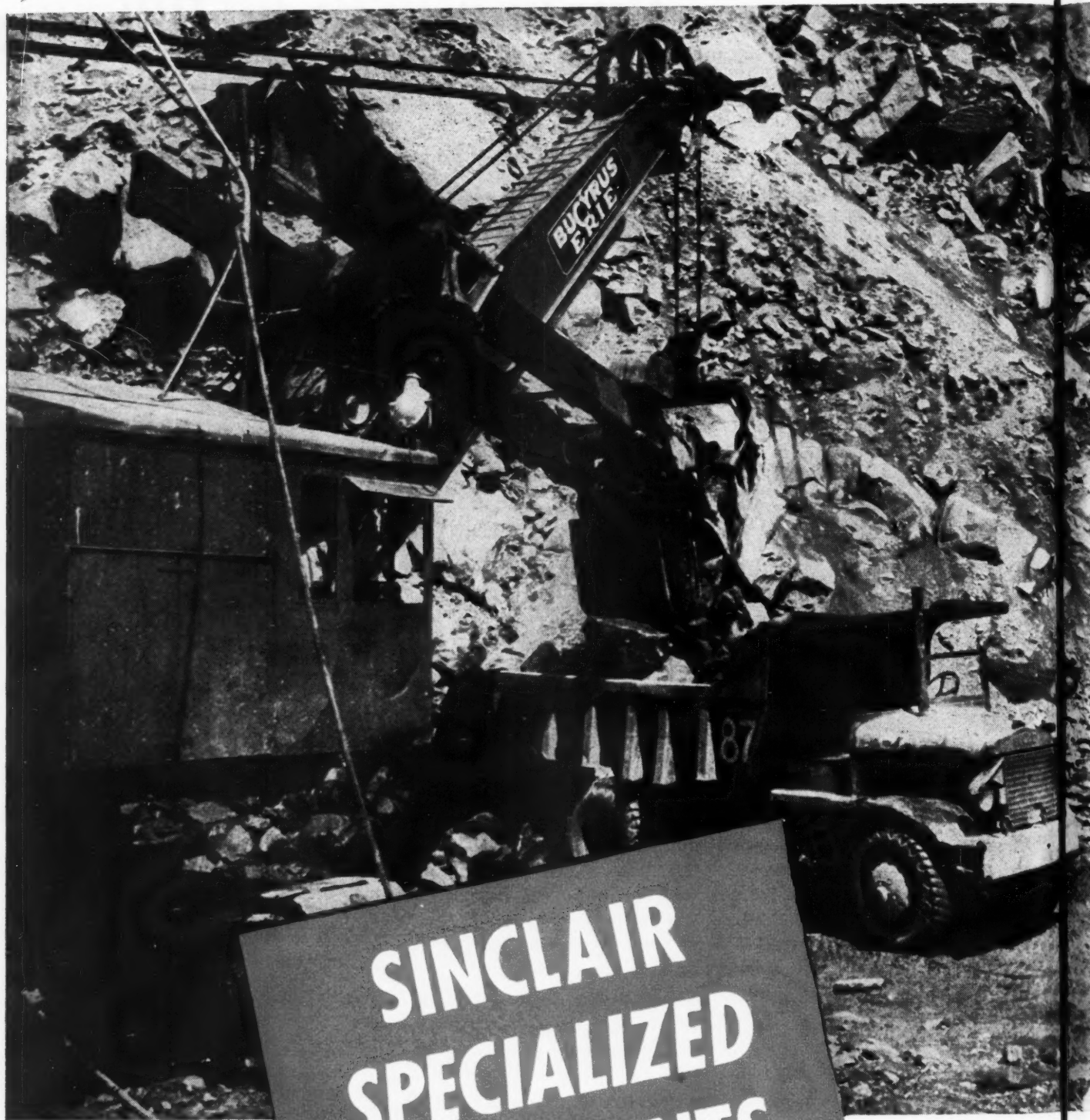
LETOURNEAU
PEORIA, ILLINOIS



TOURNAPULLS

MORE WORK PER HOUR WITH RUBBER-TIRED POWER


Keep'em on the Job...



**SINCLAIR
SPECIALIZED
LUBRICANTS**

...with

CORRECT LUBRICATION



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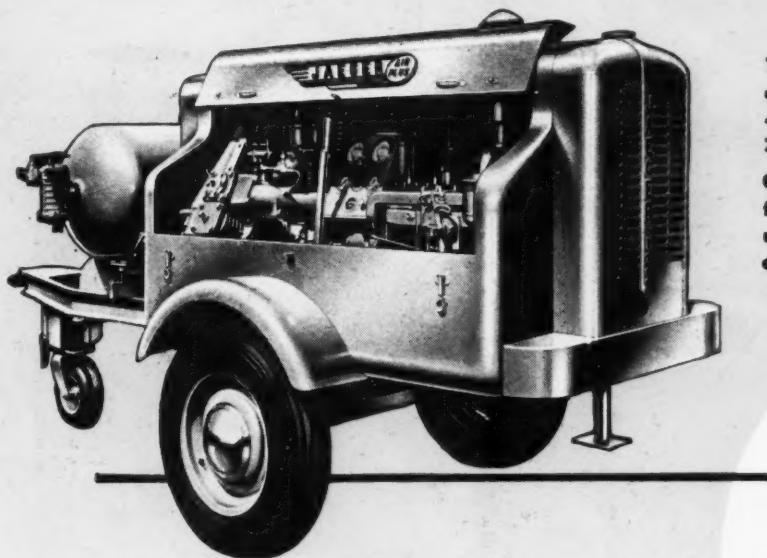
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**Model
75
cfm**

**Model
185
cfm**

runs 3 heavy breakers or medium rock drills at 90 lbs. pressure — which a model 160 can't do.

**Model
250
cfm**

runs 4 heavy breakers, 2 heavy drills or medium wagon drill at 90 lbs. pressure — which a model 210 can't do.

**Model
365
cfm**

runs a heavy wagon drill plus rock drill or heavy breaker at 90 lbs. pressure — which a model 315 can't do.

**Model
600
cfm**

runs 2 heavy wagon drills plus heavy rock drill at 90 lbs. pressure — which a model 500 can't do.

All "New Standard" Air-Plus Compressors deliver more air to run more tools at full 90 lbs. pressure, yet cost no more than obsolete "old standard" sizes:



See your Jaeger distributor or send for new Catalog JC-8

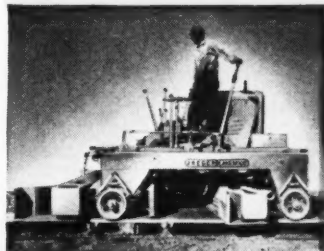
THE JAEGER MACHINE CO.

Columbus 16, Ohio

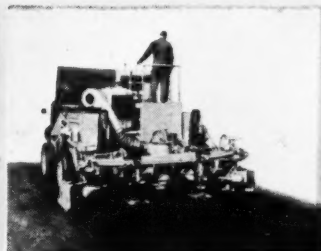
REGIONAL OFFICES:

1504 Widener Bldg., Philadelphia 7
226 N. La Salle St., Chicago 1
235 American Life Bldg., Birmingham 1

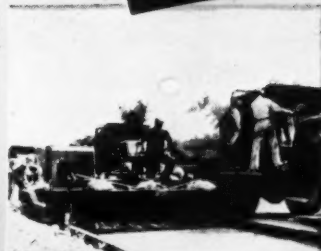
JAEGER
Engineered EQUIPMENT



Diagonal Sced Finishers and Remixing-Compacting Screw Spreaders — team with today's mass-production pavers.



Model BP-5 Bituminous Paver Instant 8-12½ ft. adjustability, fast oscillating compactor and screeds, many other features.

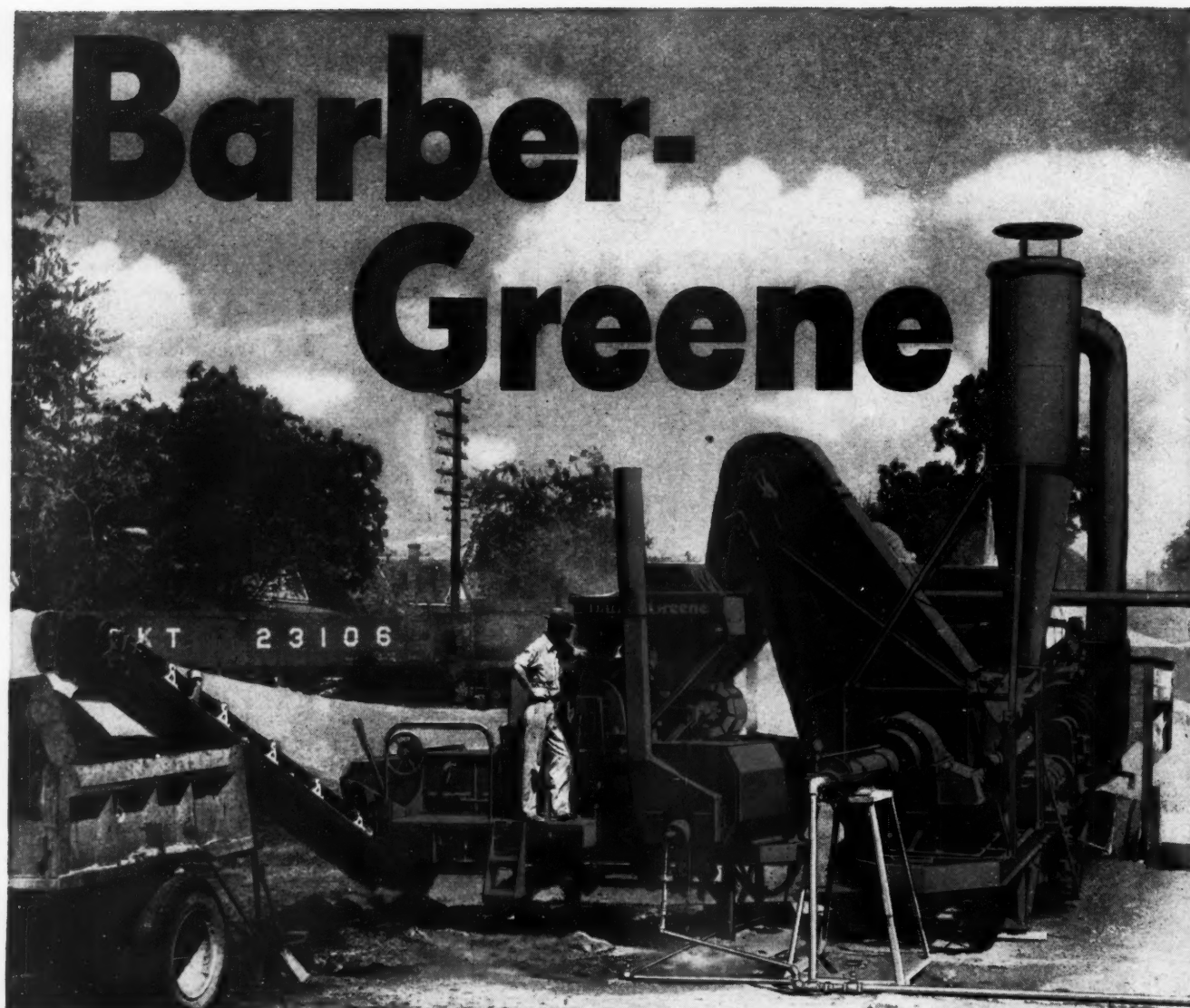


Truck Pavers with Concrete Spreader — the mobile paving plant for half-width slab without detours, other concrete pours.

HYDRO-HOISTS with
2 Speeds,
Hydraulic Control

SURE PRIME Dewatering
and Pressure Pumps

SPEEDLINE Concrete,
Plaster, Bituminous
Mixers



This *Small* Bituminous Mixing Plant Does a *BIG* Job!

Here's a complete, easy-to-operate, small bituminous mixing plant! It is specifically designed for maintenance and repair work, small road building projects and a variety of other surfacing jobs. The B-G Maintenance Plant will handle any type of mix, and its capacity is remarkable, considering its size and portability.

The B-G Maintenance Plant is truly portable and easily erected. Small enough to operate at low cost on maintenance and general repair work,

Typical set-up of the Barber-Greene Maintenance Plant. Various combinations to meet your immediate needs may be easily arranged.

it is still large enough to handle small construction projects. It operates on the same principles as the larger Barber-Greene Central Plant, measures the correct amount of aggregate and bitumen, thoroughly mixes them and discharges the mix into trucks.

It consists of two basic units—the 840 Mixer and 830 Aggregate Dryer. Each unit is equipped with a towing hitch and pneumatic tires to trail smoothly behind your truck when going from job to job. A complete line of auxiliary equipment available including Reciprocating Feeder, Bins, Dust Collector, etc. For illustrative literature, write Barber-Greene Company, Aurora, Illinois.



BARBER-GREENE COMPANY • AURORA, ILLINOIS

Constant Flow Equipment



LOADERS



PERMANENT CONVEYORS



PORTABLE CONVEYORS



COAL MACHINES



BITUMINOUS PLANTS



FINISHERS



DITCHERS



**DIRT MOVERS
TIME SAVERS
MONEY SAVERS . . .**

Firestone

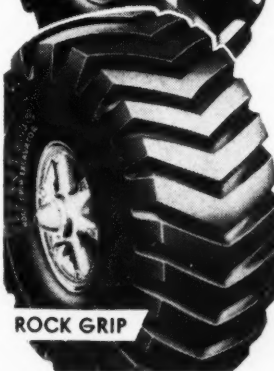
OFF-THE-HIGHWAY TIRES



EARTH MOVER



GROUND GRIP



ROCK GRIP

ON ANY earth-moving or construction job, dependable, low-cost tire performance is essential to a profitable operation. *Downtime is a profit killer.*

Firestone Off-the-Highway Tires are money savers because they speed up work and cut downtime to the minimum. They can take hard punishment and stay on the job.

Hundreds of operating cost records show that Firestone Tires have accounted for very important savings in every type of off-the-highway work.

Whatever your operation may be, you can cut tire costs and downtime losses with Firestone Tires. If you will give them a trial, they will prove themselves.

Listen to the Voice of Firestone every Monday evening over NBC

Firestone OFF-THE-HIGHWAY TIRES

Copyright, 1948, The Firestone Tire & Rubber Co.



SNOW MOVERS



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COLORADO. These pictures show "Caterpillar" Diesel equipment owned by Routt County. They are typical of hundreds of public-sponsored snow-removal scenes.

(Left—top and bottom) A No. 12 Motor Grader, with plow and wing, clearing snow from county road east of Hayden. (Right) A D7 Tractor, operating 14-ft. plow, opening snowbound road near Steamboat Springs. (Routt County has a total of 600 miles of snow road to plow.)



S THAT "AIN'T KIDDIN'"

Snowbound roads really open up when "Caterpillar" Diesels throw their might into the job.

In tractors it's the combination of brute strength and sure-gripping tracks that drives the biggest plows through the highest and toughest drifts.

In motor graders it's the advantages of tandem-drive wheels with low-pressure tires and engine weight enforcing traction that enable plows and

wings to throw snow far back off the shoulders.

Add to winter work their year-round usefulness, and you'll find these versatile machines paying for themselves while they're still young.

Counties, municipalities and contractors know the value of these outstanding units for snow removal, road maintenance and other important work.

CATERPILLAR TRACTOR CO. • PEORIA, ILL.

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL **ENGINES • TRACTORS • MOTOR GRADERS**
EARTHMOVING EQUIPMENT



Introducing the **NEW** **Cedarapids** **COMPACTOR**

**It's the answer to your
Compaction Problems!**



Compaction of soils is simply a process of removing air voids and moisture by pressure and vibration. The Cedarapids Compactor does this by combining a heavy rubber-tired roller with a vibrating mechanism which greatly increases the compactive effort of the static load of the unit. The soil is pushed right straight down with a minimum of lateral displacement. On actual jobs, where specified densities *could not be obtained* with regular compaction units, a Cedarapids Compactor quickly produced the desired density. Whether compacting highway subgrades and bases, airport runways or dam fills, stabilizing soil cement or soil and graded aggregate—a Cedarapids Compactor will do it better and at lower cost. Offered in two sizes for a wide variety of jobs. Winter is coming soon—Will you be through with your soil compaction work? If not, get a Cedarapids Compactor on the job NOW. Write today for Bulletin COMP-2 for complete details.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

ADAPTABLE

TO A WIDE VARIETY OF SOILS

Tire pressures can be varied according to soil-bearing capacity. For deep penetrations, maximum weight and tire pressure are required. For surface compaction, such as 6" to 18" depths, the tire pressures and weights must be reduced to a point where lateral displacement is the least.

Weight can be added or removed to suit various kinds of soil.

Vibrations are controlled by a variable speed governor on the engine to provide a range of 700 to 1400 cycles per minute.

Excellent compaction is obtained when used as a static roller only. Vibration produces an extra 3 to 10% additional compaction.

May be towed by rubber-tired or track-type tractors at speeds of from one to two and a half miles per hour.

THE IOWA LINE

of Material Handling Equipment Includes —
ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS
STEEL BINS • BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS • FEEDERS
TRAPS • STRAIGHT LINE ROCK AND GRAVEL PLANTS
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
DRAG SCRAPER TANKS • TRACTOR-CRUSHER PLANTS
WASHING PLANTS • KUBIT IMPACT BREAKERS
STEEL TRUCKS AND TRAILERS

4 Times the PRODUCTION

for Peter Kiewit Sons' Co.



When this Athey Force-Feed Loader went on the job for Peter Kiewit Sons' Company at North Platte, Nebraska, a wheel-type tractor with a front mounted loader had been filling 4-yard trucks at the rate of one every 3 to 5 minutes. The Force-Feed Loader cut the loading time to **45 seconds** — increased the loads-per-hour from 15 to 60.

"The Force-Feed Loader is capable of picking up the windrow so cleanly that very little — if any — cleanup work was necessary behind it," reports H.

H. Selleck, Peter Kiewit Sons' Company, Superintendent. "We are certain the high production of the Force-Feed Loader saved us many hundreds of dollars in the removal of the subgrade material."

Athey Force-Feed Loaders set similar speed and cost records loading snow, oil mix, ripped-up paving, damp leaves, scarified macadam and many other types of material. Get more details from your Athey-"Caterpillar" Dealer, or write direct to . . .

ATHEY PRODUCTS CORPORATION
5631 West 65th Street
Chicago 38, Illinois

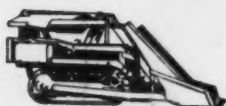


Athey

FORCE-FEED LOADERS



FORCE-FEED LOADERS



MOBILOADERS



FORGED-TRAX TRAILERS

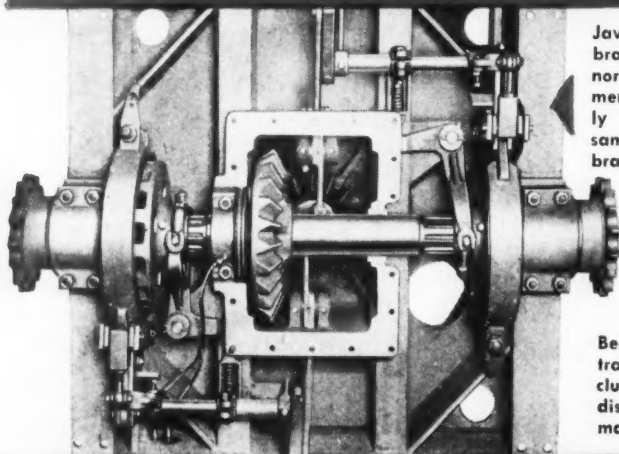
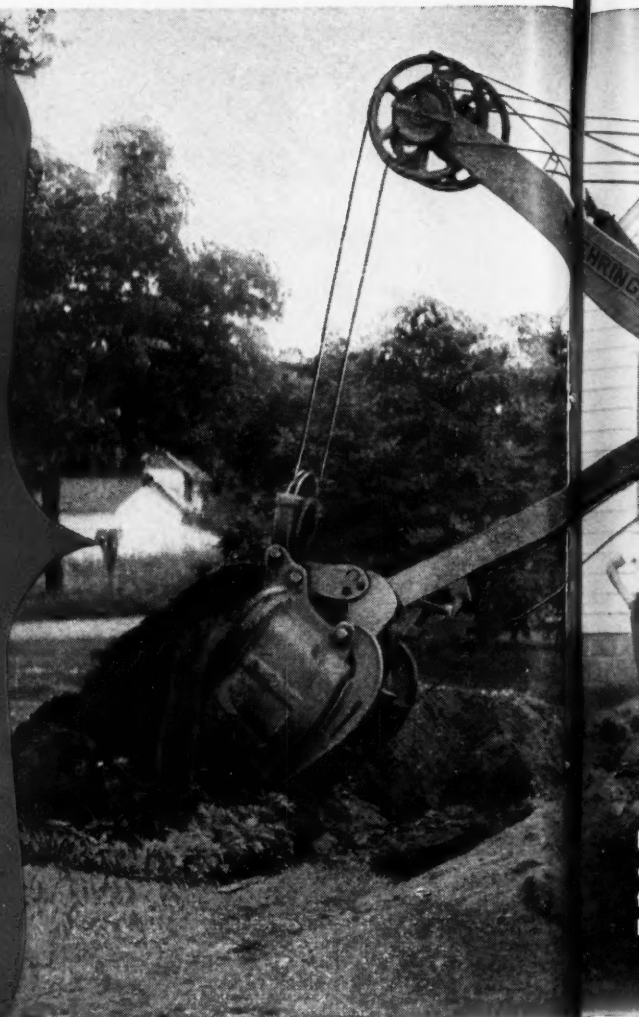


RUBBER-TIRED TRAILERS

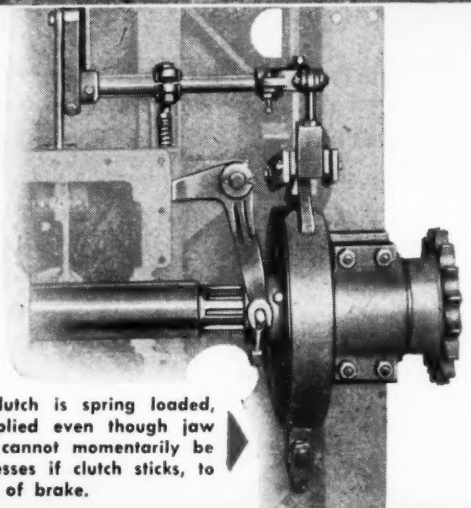
KOEHRING 205

HALF YARD

Works Safely on 30% Grade without Blocking



Jaw clutches and traction brakes work as a team. In normal operation, engagement of brake automatically disengages clutch for same crawler. Applying both brakes locks 205 securely for all operations.



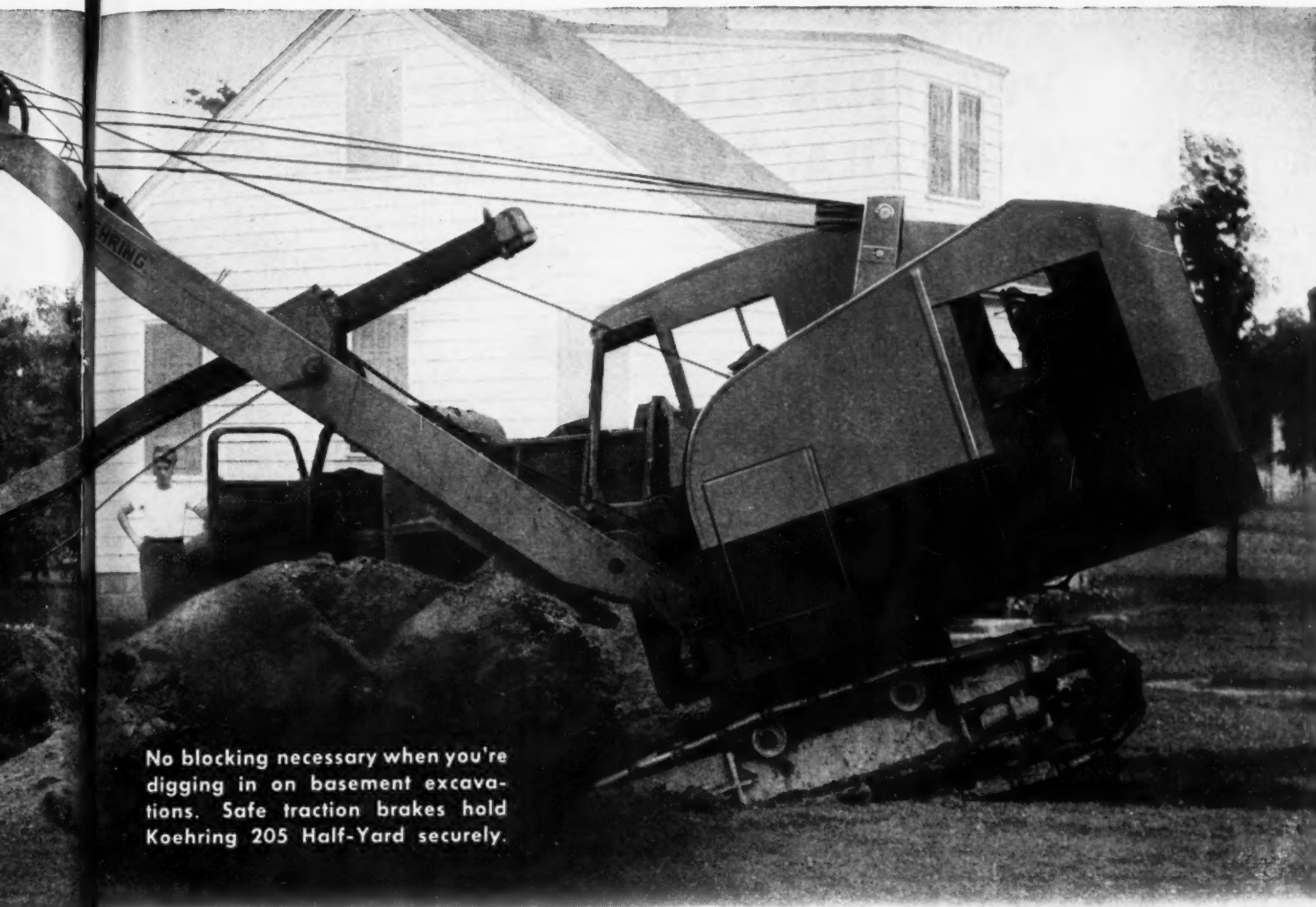
Because linkage to jaw clutch is spring loaded, traction brake can be applied even though jaw clutch is locked tight and cannot momentarily be disengaged. Spring compresses if clutch sticks, to make possible engagement of brake.

HERE'S ANOTHER KOEHRING UNIT THAT WILL SAVE TIME ON YOUR DIRT-MOVING JOBS . . . HEAVY-DUTY DUMPTOR

6-yard Koehring Dumptor has constant-mesh transmission, eliminates delay for shifting gears . . . has three fast forward and reverse speeds, can shuttle from shovel to dump, eliminates turning delays . . . has instantaneous gravity dump, saves 10 to 20 seconds in unloading time every cycle. They're engineered and built to haul tough materials over rough terrain and steep grades . . . are easy to operate . . . simple to maintain . . . will give you less down-time, more work-time. Ask your Koehring distributor for complete Dumptor facts TODAY.

DUMPTOR — Trade Mark Reg. U. S. Pat. Off. KOEHRING





No blocking necessary when you're digging in on basement excavations. Safe traction brakes hold Koehring 205 Half-Yard securely.

Saves Time on Every Job

You can work safely on a 30% grade without blocking crawlers on the Koehring 205 Half-Yard. Crawlers are held by big friction brakes, not by a pawl or jaw lock. These friction brakes provide the flexibility that's necessary to cushion brake assembly against operating shocks. That's why there's no danger of brake damage on the 205. Without blocking you will save time on any job.

Here are other advantages of the Koehring 205 Half-Yard brake and steering system:

Traction brakes can be applied at any time, on any grade. Safety spring in operating linkage lets you apply traction brakes even when traction jaw clutches are locked and cannot be disengaged. Your 205 will never run away from you on the grade.



- By applying power to one crawler, and brake to the other, you can turn in a tight circle, within 205's own length.
- Easy to make wide turns under accurate control.
- Operator never leaves cab to apply traction brakes or to steer. Separate levers in cab control friction brake as well as jaw clutch for independent operation on each crawler.
- Full steering and brake control is available with cab in any position.

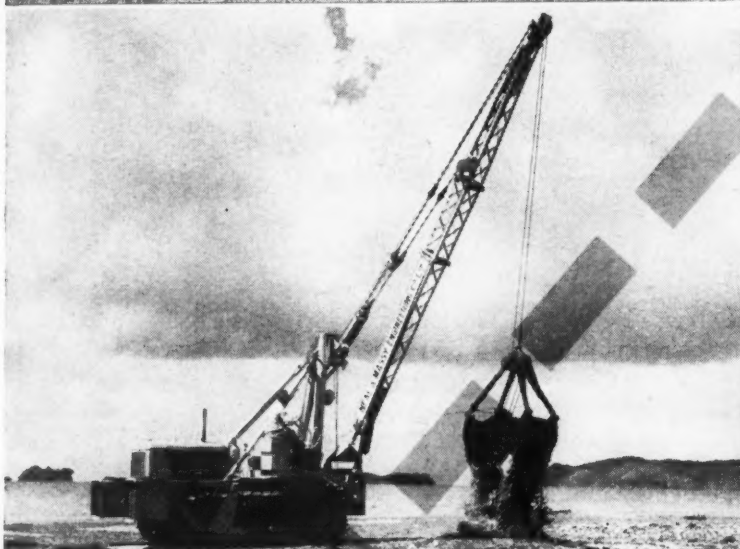
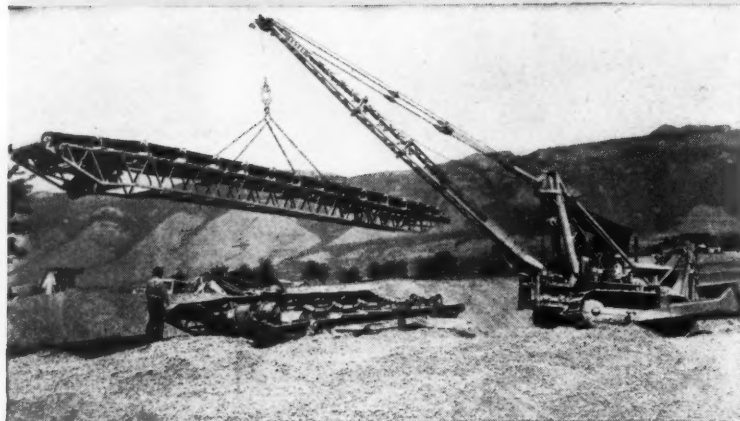
Your Koehring distributor can show you many other ways this versatile Half-Yard can save time, money and increase production on your excavating jobs. Ask him, too, for facts and figures on the larger Koehring 304 and 605 excavators.

KOEHRING COMPANY

Milwaukee 10, Wisconsin

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

PUT THIS EXCAVATOR ON YOUR TRACTOR IN 2 HOURS



**DRAGLINE, CLAMSHELL AND CRANE
FOR MOUNTING ON "CATERPILLAR"
D8, D7, D6 TRACTORS, NEW OR USED**



HYSTER COMPANY

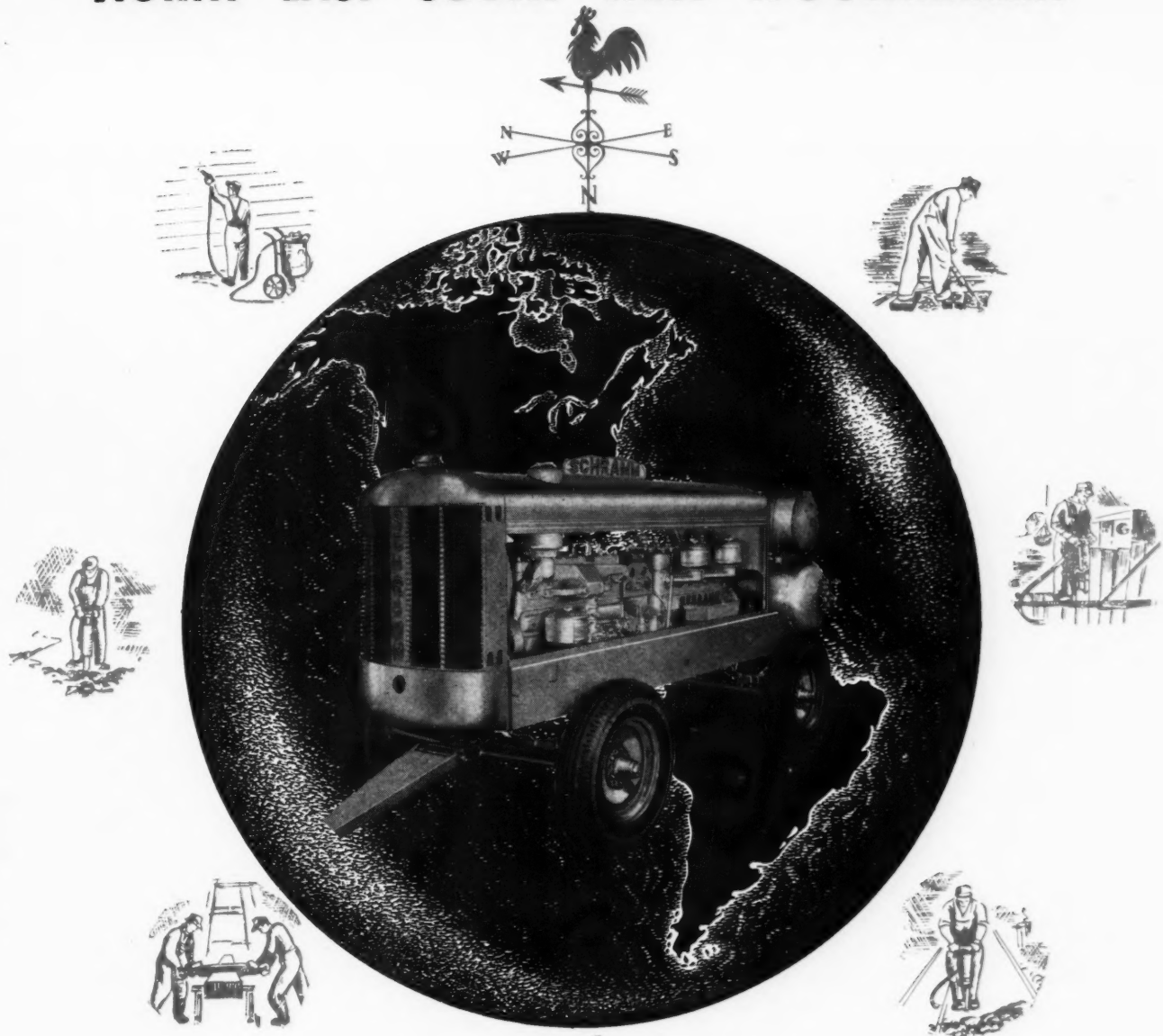
2921 N. E. Clackamas St., Portland 8, Oregon
1821 North Adams Street . . . Peoria 1, Illinois

—that's HYSTAWAY

Talk about work performance! A bulldozer equipped "Caterpillar" track-type tractor with Hystaway shortens job schedules and lowers production costs. Hystaway does practically everything that a conventional shovel can do—and costs less!

It can be mounted by 2 men in 2 hours and taken off in 1 hour (after initial installation). Your "Caterpillar" distributor can arrange a demonstration. **CURRENT DELIVERY.** Write for literature.

NORTH • EAST • SOUTH • WEST • IT'S SCHRAMM!



DOING JOBS LIKE THESE . . .

throughout the Construction Field!

TOOLS for the JOB

Schramm Inc. also has a complete line of Pneumatic Tools to offer and recommend for operation by their Compressors.

These include Rock Drills, Paving Breakers, Trench Diggers, Clay Spades, Backfill Tampers, Tie Tampers, Sheeting Drivers, Demolition Tools, Chain and Circular Saws.

Write for bulletins and prices.

Rock Drilling
Concrete Breaking
Demolition

Trench Digging
Driving Sheet Pile
Backfill Tamping

Spray Painting
Sand Blasting
Spraying Cement

Tie Tamping
Timber Sawing
Riveting

At almost every turn you need compressed air!

The above check list indicates some of the many compressed air jobs to be done, all of which are accomplished easily, quickly and economically with Schramm Air Compressors.

Here's *why* you profit, as others have, by using Schramm: they're compact, lightweight, easy to start; built for rugged jobs, to provide a continuous flow of air. Important features include 100% water cooled; mechanical intake valve; forced feed lubrication and easy, electric push-button starting.

Performance everywhere has proved Schramm Air Compressors can do any compressed air job you require. Write today for list of models and sizes.

SCHRAMM INC.

THE COMPRESSOR PEOPLE • WEST CHESTER • PENNSYLVANIA

*"Greater yardage
lower maintenance costs"*



with Gulf Quality Lubricants and Fuels"

... says Florida Contractor



B. B. McCormick & Sons, Inc., Jacksonville Beach, Florida, have the contract to build about six miles of State Highway #125 in Baker County, Florida. The

project involves clearing and grubbing, grading 70,000 yards, approximately the same yardage of lime rock base, surface treatment, and a 200-foot concrete bridge.

"Our earth moving equipment is delivering top-notch performance with Gulf lubricants and fuels on the job—one big reason we're making fast time," says Joseph Dickey, Superintendent of B. B. McCormick & Sons, Inc. "Gulf products and fine service help us get more work out of each unit and avoid mechanical troubles, which means extra

yardage and lower maintenance costs."

Like so many other leading contractors, B. B. McCormick & Sons has found that it's good profit insurance to use Gulf lubricants and fuels. Gulf quality lubricants provide an extra margin of protection against mechanical delays—and Gulf quality fuels help insure more efficient engine performance.



Gulf Oil Corporation • Gulf Refining Company

Division Sales Offices:

Boston
New York
Philadelphia

Pittsburgh
Atlanta
New Orleans

Houston
Louisville
Toledo

**"WEIGHT *produces* TRACTION,
traction PLUS POWER *produces* pull on blade"**



ROME 4.0.4

...Unchallenged for Traction-Power

When two passes have to be taken at a cut, where one should do . . . when less material has to be moved because the motor grader labors and stalls under the load . . . the *loss of time and money* can only result from such operations.

Almost every user of heavy-duty earth moving equipment knows that "weight produces traction, and traction Plus Power produces PULL." Yet, many fail to take these facts into consideration in purchasing their equipment needs. A quick study of the figures in the arrows surrounding the illustration of a ROME 4.0.4 Motor Grader should prove to any skeptic that ROME

is producing greater traction by weight . . . and greater work capacity with **SUPERIOR POWER.**

Make your own comparison with these figures with other graders. Only a ROME 4.0.4 can produce for its owner the kind of superior performance that saves both time and money on any type of grading job. For the operator of a ROME 4.0.4 there is surprise in store: a maneuverability unequalled . . . with fingertip hydraulic control that is more positive and flexible; and does not tire the operator.

A ROME 4.0.4 Motor Grader is the **ALL-ROUND PERFORMER** that should be on your next grading job.

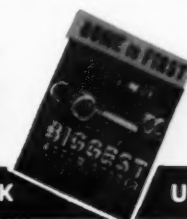
ROME GRADER AND MACHINERY DIVISION

THE UNION FORK AND HOE COMPANY . . . ROME, NEW YORK

U.S.A.

Send-

for Bulletin 4785M
and the address of
your nearest Rome
Grader Distributor





THE NEW

Thor

70- POUND
BREAKER

Here's a new Thor breaker so good it will "sell in pairs!"

It's the Thor "24"—a completely new 70-pound breaker that answers a big demand for a demolition tool just under the heavy duty class.

More than this, *two* of the new Thor "24's" will operate at full efficiency off one 105 cubic foot compressor . . . *another popular demand!*

The Thor 84-pound "25" leads the heavy duty field . . . the Thor 59-pound "23" out-powers the light duty class. NOW Thor places a great new leader in the 70-pound class.

Watch for full details soon from your Thor distributor.

INDEPENDENT PNEUMATIC TOOL CO.

Aurora, Illinois

Export Division 330 W. 42nd St., New York 18, N.Y.

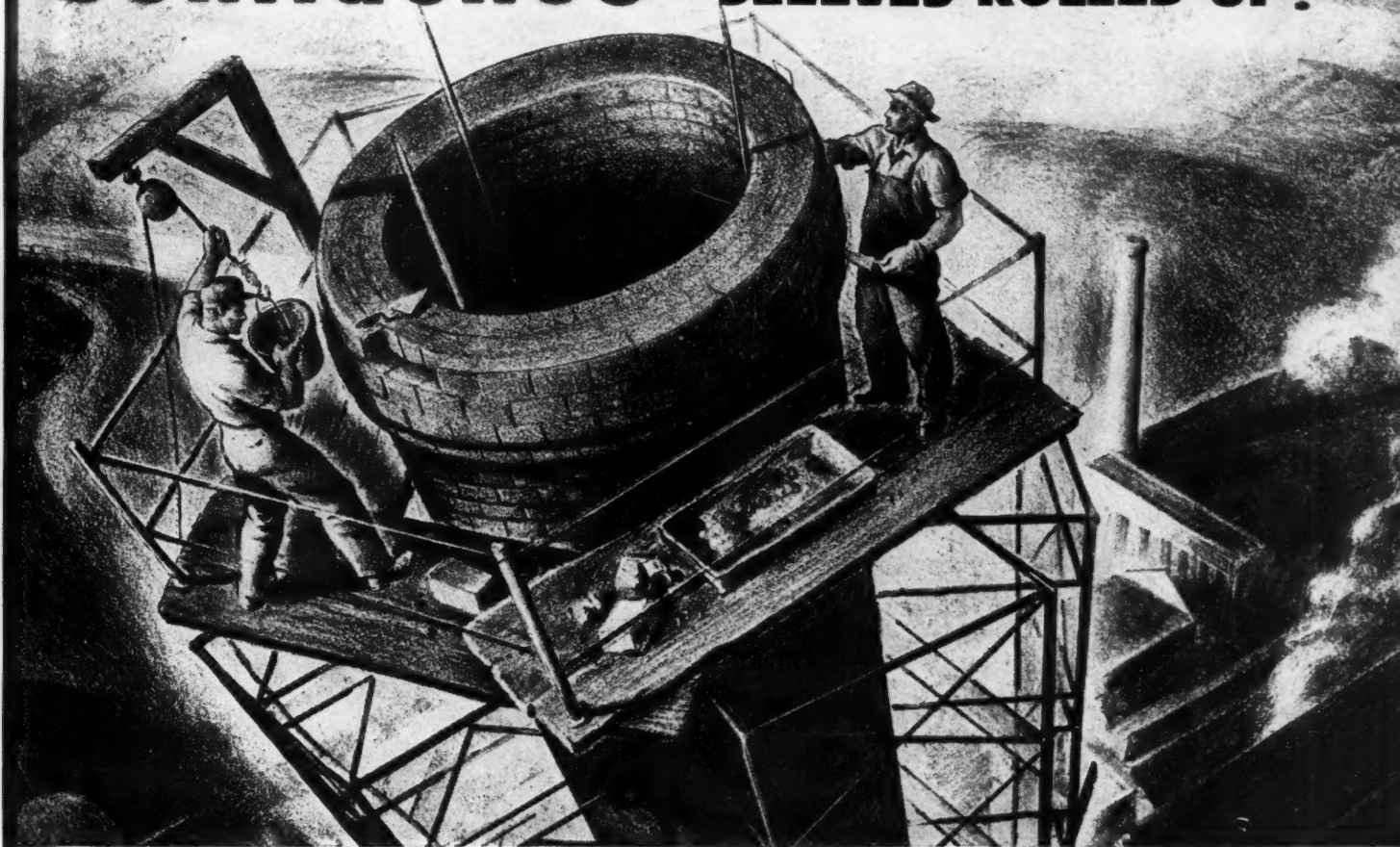
Birmingham Boston Buffalo Chicago Cincinnati Cleveland Denver
Detroit Houston Los Angeles Milwaukee New York
Philadelphia Pittsburgh St. Louis St. Paul Salt Lake City Seattle
San Francisco Toronto, Canada Sao Paulo Brazil London, England

Thor

PORTABLE POWER

TOOLS

Confidence- WITH ITS SLEEVES ROLLED UP!



STRAIGHT AND STALWART, every factory stack is a towering symbol of man's faith in the future... industry's confidence in its ability to create and to expand production for better living and a richer world.

With confidence like that, Roebling has pioneered in developing and making an extraordinary range of products indispensable to industry. And the confidence that its products and engineering skill have earned in every industrial field is one of Roebling's most valued assets. Every Roebling employee is striving to safeguard that confidence by making products and rendering services that are of maximum utility to you.

YOU CAN'T GO WRONG WITH THE RIGHT WIRE ROPE

EVERY TYPE of Roebling Wire Rope is right for certain service. But that's not enough... the important thing is that you choose the one rope that's *right* for your own job... the rope with the right balance of strength, flexibility, fatigue and abrasion resistance to give real economy over a long period of use.

Your Roebling Field Man will gladly study your requirements, and you can have full confidence that the rope he rec-

ommends will give you top returns per dollar. Whatever type it is, preformed or non-preformed, it will have behind it Roebling's unequalled experience in research, development and manufacturing the finest wire products that can be made. Call or wire the nearest Roebling branch office.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

A CENTURY OF CONFIDENCE

ROEBLING



★ WIRE ROPE AND STRAND ★ FITTINGS ★ SLINGS ★ SUSPENSION BRIDGES AND CABLES ★ AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS ★ AERIAL WIRE ROPE SYSTEMS ★ ELECTRICAL WIRE AND CABLE ★ SKI LIFTS ★ HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL ★ SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH ★ LAWN MOWERS

Here's "Profit Insurance"



... on those close bids

Low, competitive bidding seldom leaves much room for profits. But here is something that will help. You can speed the job—save time and money by using ARMCO Corrugated Metal Drainage Structures.

Flexible, corrugated metal design assures ample strength without excess weight. This means low handling and hauling costs. Job costs are low because unskilled labor quickly and easily makes the installation. There is no breakage, no curing, no waste, no delay.

On highways, for example, traffic can roll as soon as backfilling is completed. Time spent in maintaining detours is less-

ened. No expensive equipment is required for installation. A few men with a rope sling or a small tripod can handle the largest structures. Individual lengths of standard pipe and PIPE-ARCH are supplied in any length that can be hauled and handled. They are joined

by simple band couplers. Prefabricated end-sections are simple and easy to install. On larger MULTI-PLATE structures individual plates are pre-curved and delivered to the job site ready for immediate assembly.

Use ARMCO Drainage Products on highways, railways, airports, under city streets or wherever else you need efficient, economical drainage. You'll increase profits and cut costs. Write for complete information. Armco Drainage & Metal Products, Inc., 2365 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation.



ARMCO DRAINAGE PRODUCTS



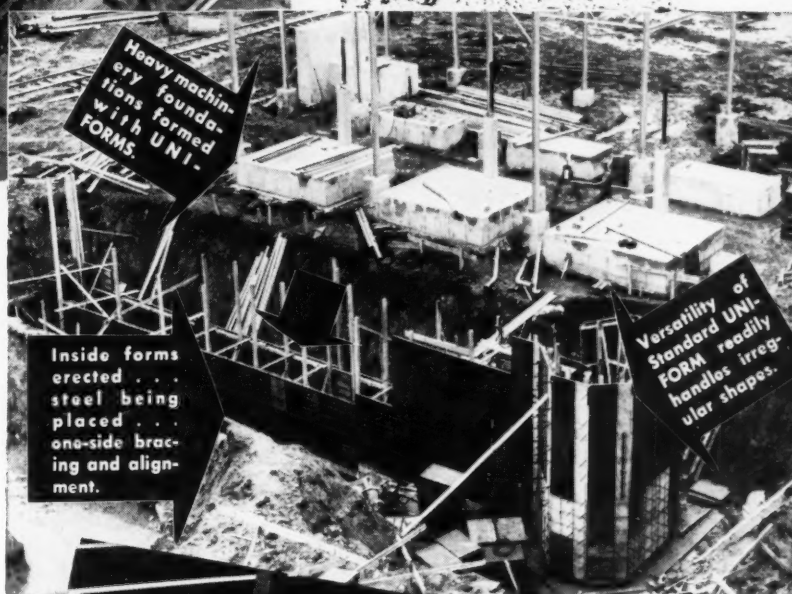
**ONLY
UNI-FORMS
COULD
DO THIS
JOB!**

Contractor: **NATIONAL CONCRETE FIREPROOFING CO.**
1220 Terminal Tower, Cleveland, Ohio

Only UNI-FORMS—the versatile, easy to use prefabricated wall forms—could handle the many special forming requirements necessary on this job.

Standard UNI-FORMS were used throughout to form offsets, brick ledges, box-outs, pilasters, slabs, machinery bases, irregular walls, etc.

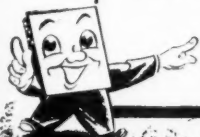
Builders everywhere are using the Uni-Form System of Wall Form Construction . . . its versatility, economy, ease of use and the fast start and finish provide lowest all-around cost.



RENT UNI-FORMS WITH AN OPTION TO PURCHASE

Let us show you how we can cut your costs. Send us a set of plans for an estimate.

**Over 5,000,000 square feet
Now in Use**



UNIVERSAL

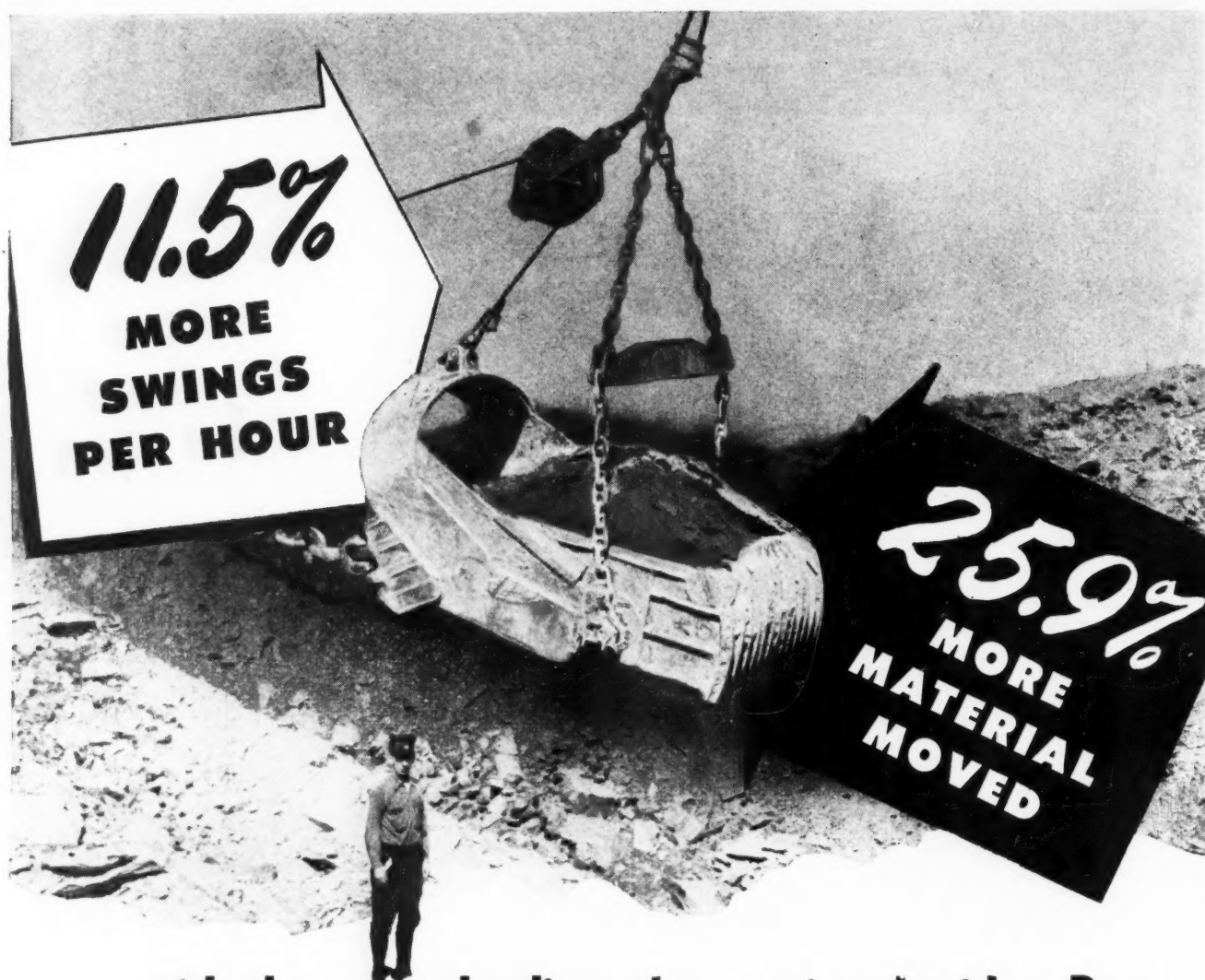
Form Clamp Company

Founded 1912

1238 N. Kostner • Chicago 51



SEND FOR OUR LATEST CATALOG



... with the same dragline when equipped with a Page AUTOMATIC

On an actual 16 consecutive day run with all conditions alike—the same dragline, the same operators and the same material, a 25 cu. yd. Page AUTOMATIC Dragline Bucket outperformed a competitive bucket of the same rated size by a wide margin. The table gives all the facts found by a well-known coal company which made the test to determine the best bucket for their own stripping operations.

Assuming that both buckets carried equal loads, the Page AUTOMATIC made 11.5% more swings per hour. Considering both the increased number of swings and larger loads, the Page AUTOMATIC moved 25.9% more material than the competing bucket.

The extra bucket loads were obtained by the AUTOMATIC because of its quick loading features. Generally, little more than two lengths of the bucket are required to pick up a full load.

Rated capacity cu. yds.	No. of 24-hour days in use	No. of bucket loads in period worked	User's Engr's estimate of cu. yds. per bucket load	Total cu. yds. excavated in period worked	Cu. yds. excavated in 24-hour day	Average number of bucket loads per hour
25 Cu. Yd. Competing Bucket	15 consecutive days	19,685*	20.2	397,637	26,509	54.68
25 Cu. Yd. Page Automatic	16 consecutive days	23,424*	22.8	534,067	33,373	61.0

*Recorded by Esterline-Angus

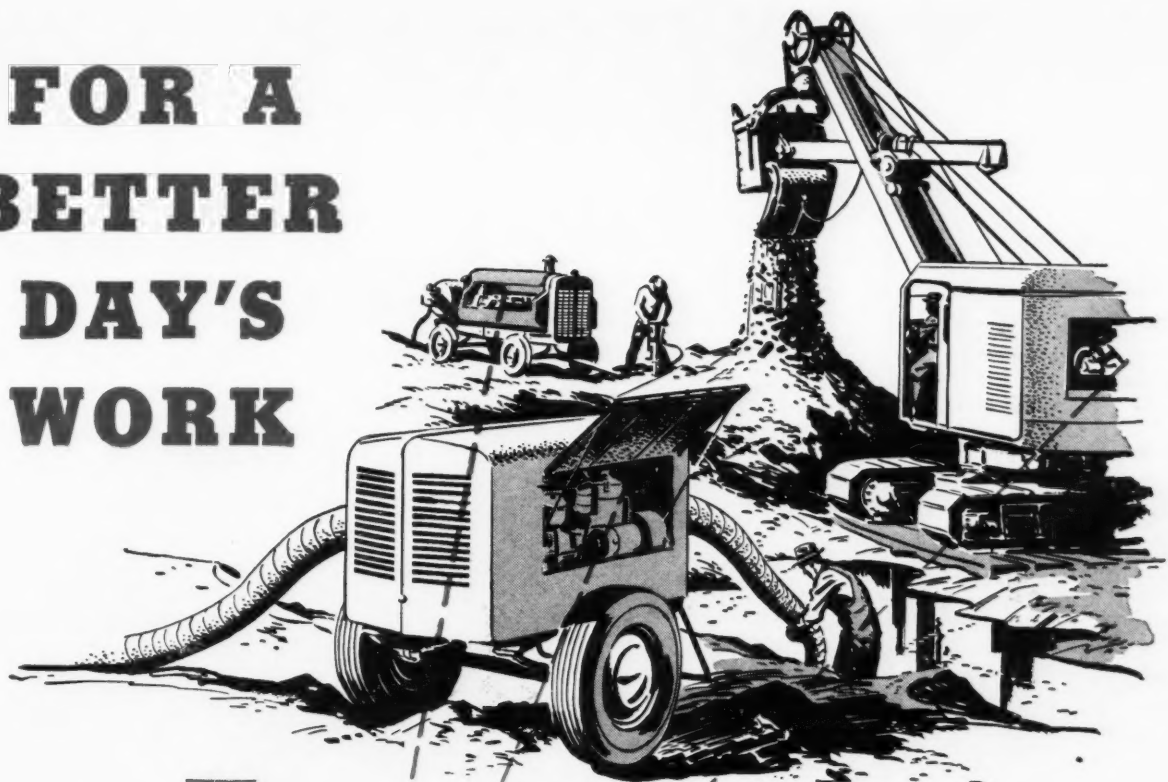
The increased yardage moved with the AUTOMATIC was due to its ability to obtain full loads on every trip while the competing bucket did not load the back end once out of ten times.

No effort was made during the test to determine the amount of dragline pull necessary to operate either bucket. However, other installations have proved that a Page AUTOMATIC requires up to 25% less dragline pull than the usual old style bucket.

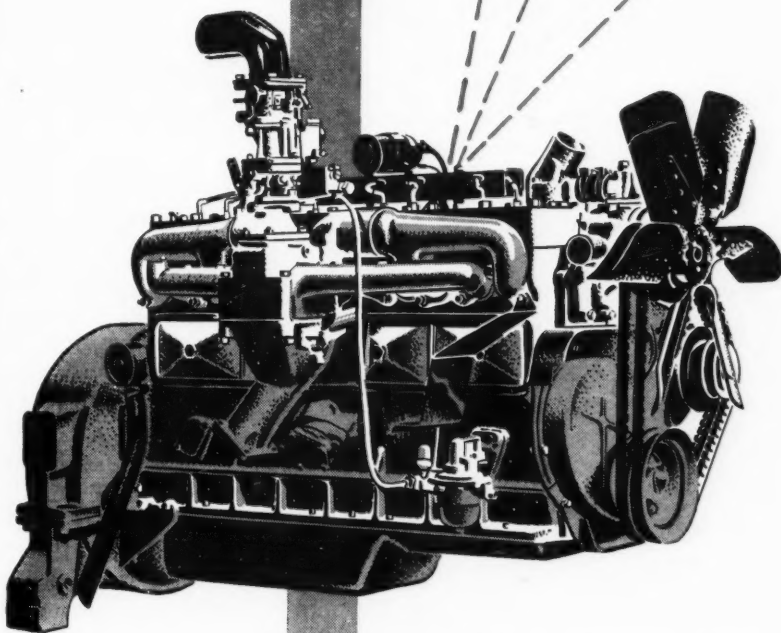
Whether you need a small bucket or a big one, you can always move more yardage at less cost with a Page AUTOMATIC.

PAGE ENGINEERING COMPANY, Clearing Post Office, Chicago, Illinois

FOR A BETTER DAY'S WORK



ON THE HIGHWAYS—ON FARMS—IN OIL FIELDS—IN FORESTS—AND IN INDUSTRY!



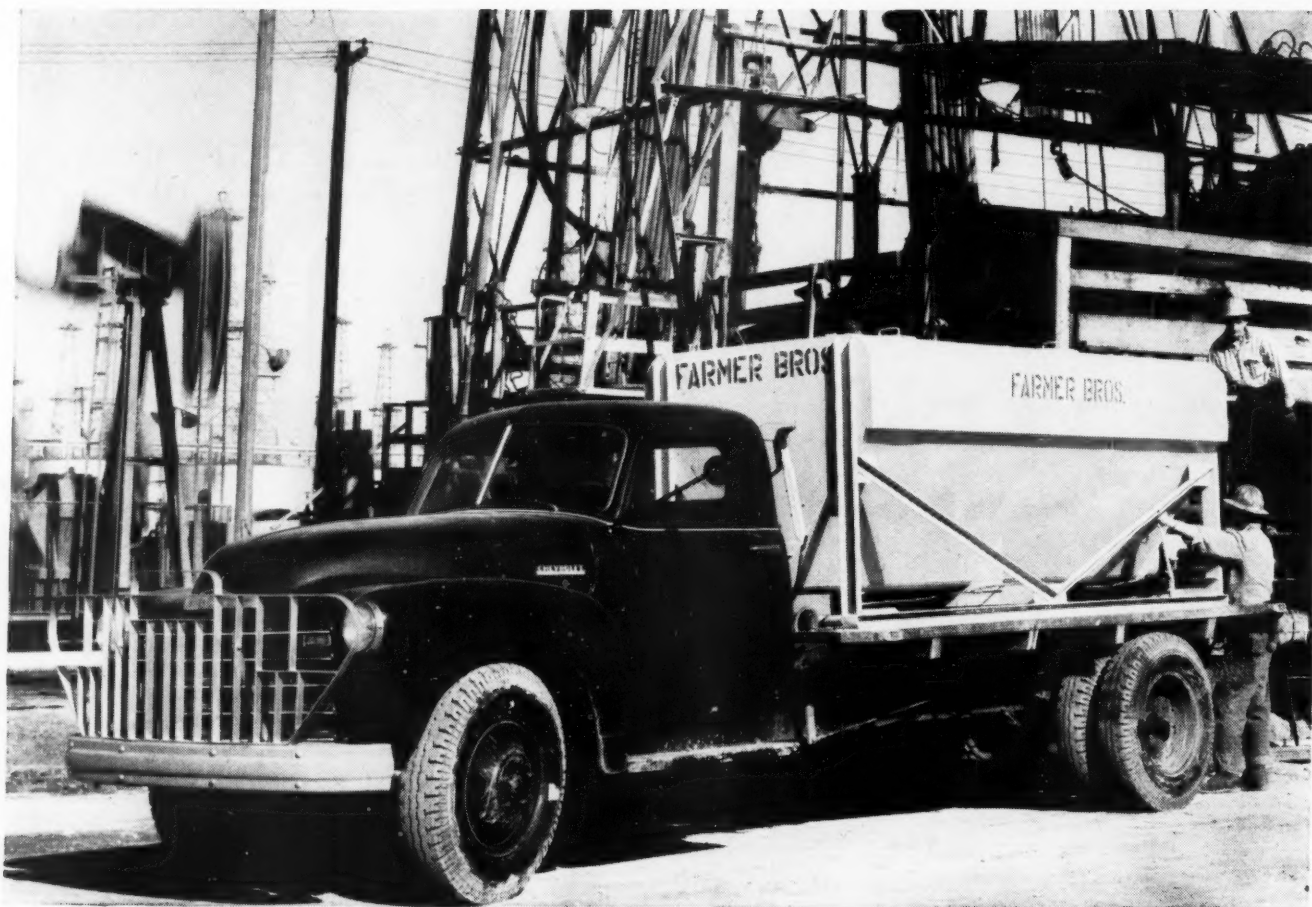
● On tomorrow's highways, roads, streets and airports—wherever construction stretches past the horizon to a better world—Chrysler Industrial Engines and Power Units are on the job. They offer rugged power for shoveling or leveling . . . smooth, economical power for pumping or pressure . . . dependable power for tight day and night schedules. And, behind each Chrysler Industrial Engine stands the engineering and production skill of Chrysler Corporation—your assurance of a better product that's built For A Better Day's Work.

CHRYSLER INDUSTRIAL ENGINES



HORSEPOWER WITH A PEDIGREE

INDUSTRIAL ENGINE DIVISION CHRYSLER CORP., 12200 E. JEFFERSON, DETROIT 31, MICHIGAN



They "Deliver the Goods" IN HIGH STYLE . . . AT LOW COST



You'll find that Chevrolet Advance-Design trucks offer *more of what you want* in your trucking operations.

They have the class of advanced styling . . . smart, modern appearance that speaks well for your business wherever they're seen.

And they back up the promise of their looks with advanced engineering that puts them far ahead in rugged durability, economy of performance, driver comfort.

Check over the features of these newer, finer Chevrolet Advance-Design trucks. Check over the costs of ownership. You'll find they're the only trucks that bring you Chevrolet's 3-way thrift—the *triple* economy of low operating costs, low upkeep costs and the *lowest list prices in the volume field!* See your Chevrolet dealer—and test the best!

CHEVROLET MOTOR DIVISION, General Motors Corporation,
DETROIT 2, MICHIGAN

Here Are the Features You Want . . . And Only Chevrolet Advance-Design Trucks for '48 Have Them All!

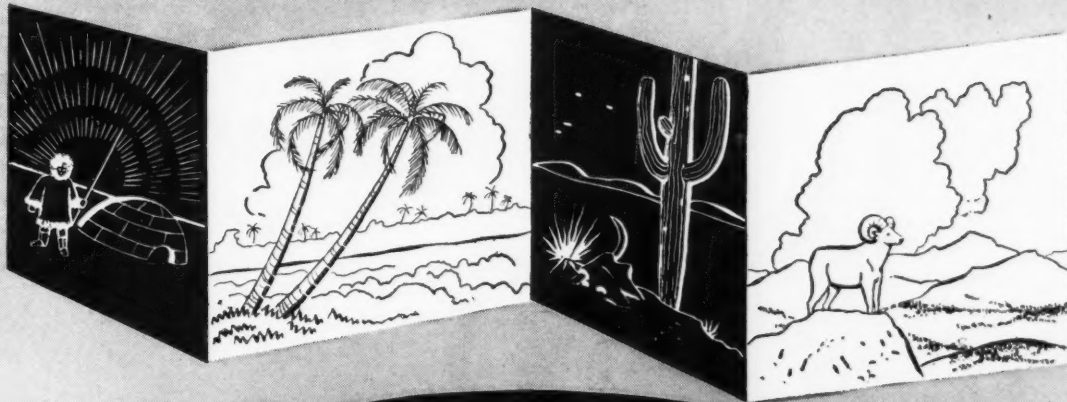
FLEXI-MOUNTED CAB, cushioned against road shocks, torsion and vibration—New Advance-Design-Gearshift Control and Foot-Operated Parking Brake in models with 3-speed transmissions . . . IMPROVED VALVE-IN-HEAD ENGINE, more durable and efficient . . . 4-SPEED SYNCHRO-MESH TRANSMISSION on Heavy-Duty models for quicker, quieter shifting . . . SPLINED AXLE HUB CONNECTION on Heavy-Duty models provides greater strength and durability . . . OTHER ADVANCE DESIGN FEATURES: The cab that "Breathes"* . . . Uniweld, all-steel cab construction . . . New, heavier springs . . . Hypoid Rear Axles on $\frac{3}{4}$ -ton and heavier models . . . Hydrovac Power Brakes on Heavy-Duty Models . . . Ball-Bearing steering . . . Wide Base Wheels . . . Standard cab-to-axle dimensions . . . Multiple color options.

*Fresh air heating and ventilating system optional at extra cost.

**CHOOSE CHEVROLET TRUCKS FOR
TRANSPORTATION UNLIMITED**

CHEVROLET ADVANCE DESIGN TRUCKS

Any place is HOME



... to a
Water-cooled portable

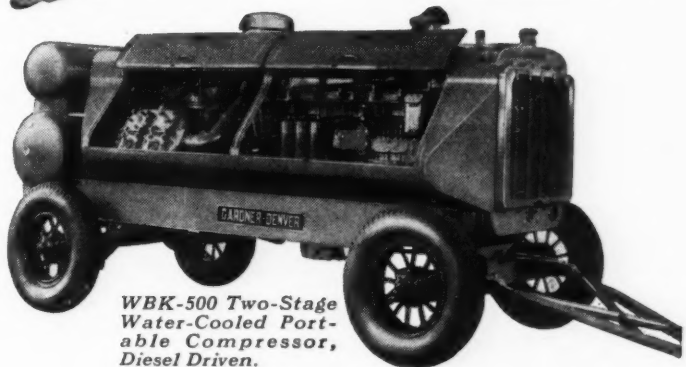
HOME is wherever you send a Gardner-Denver All Water-Cooled Portable to give uninterrupted service. For the complete water jacketing of all cylinders "weather-conditions" them for outstanding performance around the world . . . in hot climate or cold . . . at high or low altitudes.

Gardner-Denver Portables at work in all lands deliver cooler air . . . start easier in cold weather . . . use less lubricating oil . . . save wear and tear on air hoses. And don't forget, wherever these compressors go, they are backed by Gardner-Denver Service—all over the world.

For complete information, write Gardner-Denver Company, Quincy, Ill.



WHF-210 Two-Stage Water-Cooled Portable Compressor, Engine Driven.



WBK-500 Two-Stage Water-Cooled Portable Compressor, Diesel Driven.



GARDNER-DENVER

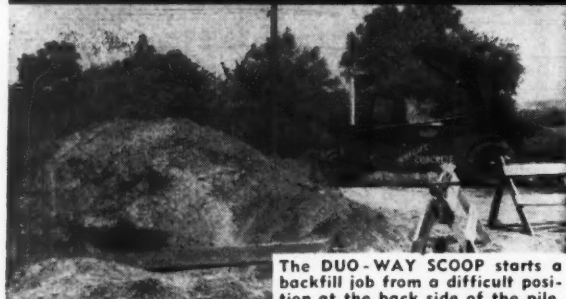
SINCE 1859



POWER

COMING AND GOING!

ON A TOUGH BACKFILL JOB



The DUO-WAY SCOOP starts a backfill job from a difficult position at the back side of the pile.

15 MINUTES LATER



A trench through the pile has been completed. 60 to 75 yards of dirt moved.

WAGNERMOBILE DUO-WAY SCOOP

Here's a new multi-purpose construction machine that works for the contractor both coming and going! With a 1-yard scoop at one end, an 84-inch dozer blade at the other end, and the driver sitting crossways in the middle, the **ONE MACHINE** does more work—it is a loader, a dozer, a truck and a tractor. Extremely mobile, easy to operate!

Powered by 114-h.p. engine with hydraulic power steering, hydraulic track tilt control and folding top section of track. Both dozer blade and scoop bucket can be operated with top track section in any position.

Ask Your Nearest MIXERMOBILE Dealer TODAY!



Manufacturers of:
SCOOPMOBILE
MIXERMOBILE
TOWERMOBILE
TOWERMOBILE-CRANE
DUO-WAY LIFT
FOLD-AWAY LIFT
DUO-WAY SCOOP
STATIONARY MIXER
STATIONARY TOWER

MIXERMOBILE MANUFACTURERS

6855 N. E. HALSEY STREET • PORTLAND 16, OREGON

MECHANIZATION OF CONCRETE PAVING

Begins Here

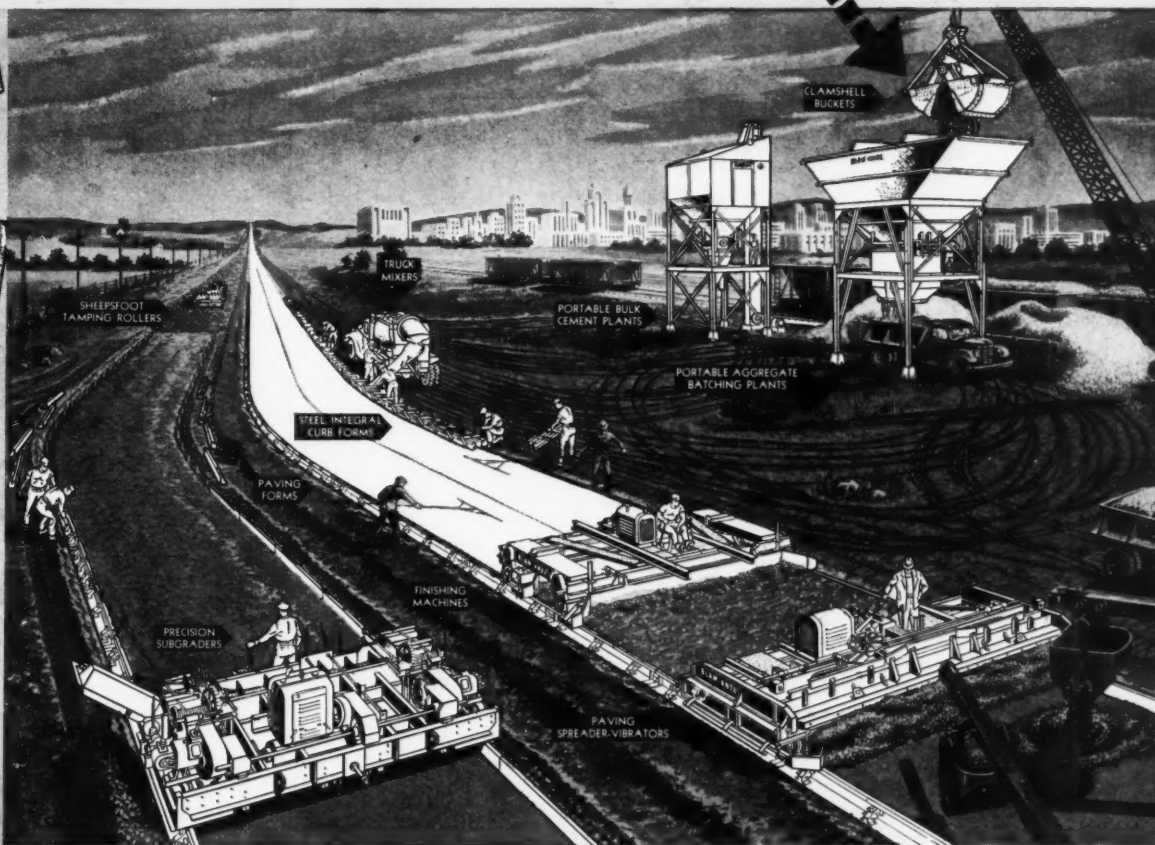
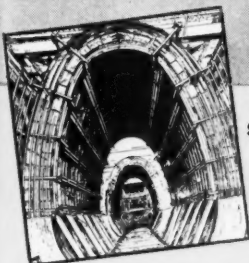
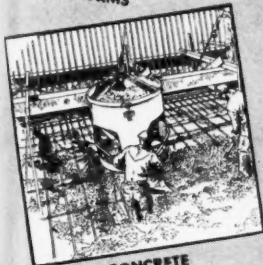
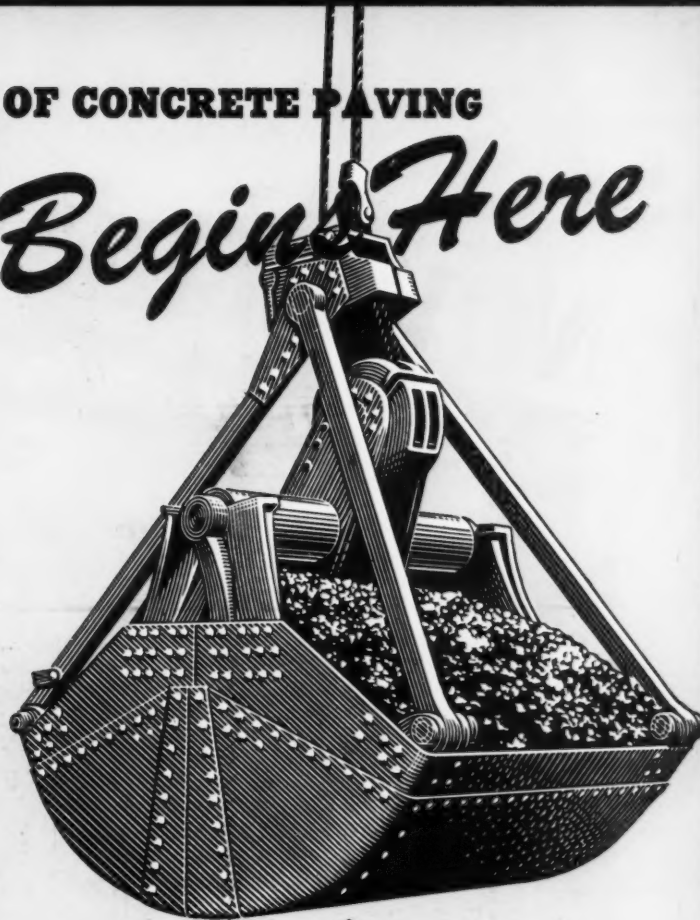
Even back in those days when aggregate was hauled to the job in horse-drawn dump wagons, paving contractors were depending on Blaw-Knox Clamshell Buckets. It was their first "mechanized tool."

Today, with such efficient roadbuilding machines as Blaw-Knox Precision Subgraders, Paving Spreader-Vibrators and Finishing Machines, it's the Clamshell Bucket that "starts the ball rolling."

Whatever your requirements are for digging, trenching, dredging or rehandling—you will find among the hundreds of different types and sizes a Blaw-Knox Bucket that's exactly *right* for the job.

BLAW-KNOX DIVISION of Blaw-Knox Company
200 Farmers Bank Building, Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Washington • Birmingham
Representatives in Principal Cities

See your nearest Blaw-Knox Distributor



BLAW-KNOX

Time and Labor Saving CONSTRUCTION EQUIPMENT

NOWHERE ELSE

a paver crawler like this...

McCalman Paving Co., of Danville, Ill. A MultiFoote Duomix 34-E Paver on an Indiana Road job.



it's a
MULTIFOOTE
Duomix 34E
DOUBLE DRUM PAVER

The MultiFoote Crawler—compare it with any other paver crawler on the market! There is nothing like it! The long, wide design gives the lowest possible ground bearing pressure. The ball and socket action of tread and roller keeps the full face of the tread on the ground, assuring better weight distribution. Lugs on alternate tread shoes make possible a self-cleaning action that throws dirt out of the roller track. Tread joints are smooth and close fitting, eliminating the "nut cracker" action that chips treads. Tread pins are of the floating type and give free action, long life and make replacement easy.

Here is a paver crawler that will mean trouble-free service and keeps the big machine *light on its feet* with minimum damage to shoulder or subgrade. This feature alone, not counting other advantages and the long record of unusual performance, makes the MultiFoote worth looking into. There is no obligation in asking for further details.

THE FOOTE COMPANY, INC.
1910 State Street Nunda, New York



MULTIFOOTE CONCRETE PAVERS

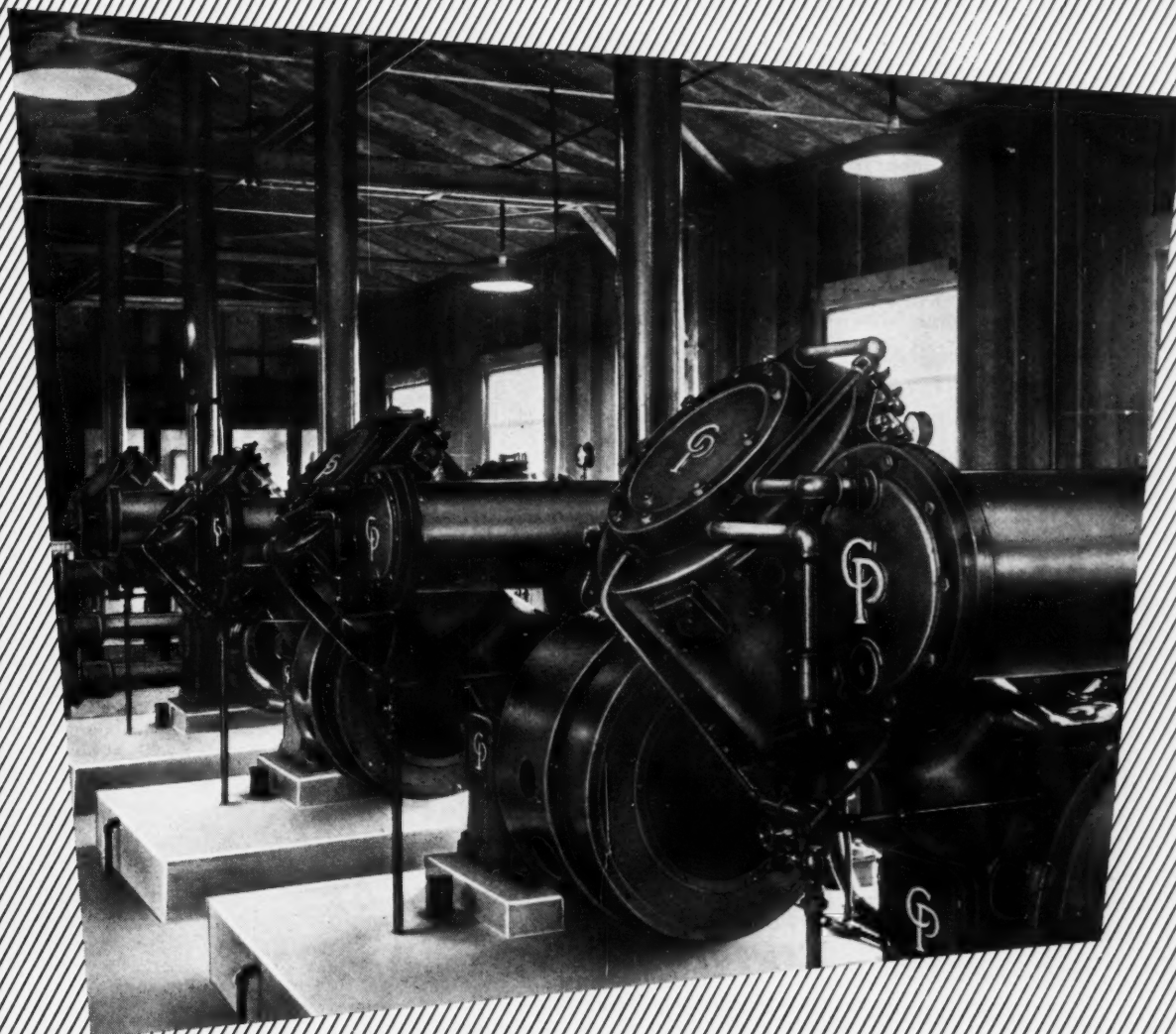
ADNUN BLACK TOP PAVERS

Kinetic ASPHALT MIXERS

Ask about the Adnun Black Top Paver, the only paver of its kind that will lay black top, stone and cinders.



Subsidiary of The Blaw-Knox Co.



It's easy to install!

TYPE Y COMPRESSOR

Shipped intact as a "package unit," ready for external connections, a CP Type Y Compressor can be set up quickly with minimum expense. It needs only a simple foundation, and requires no special skill to align and install it. Its compact design renders it ideal where floor space is restricted.

It operates at high efficiency with low maintenance because of such features as large area Simplate

valves . . . multi-step capacity regulation . . . effective inter-cooling . . . precision bearings . . . force-feed lubrication.

Available with built-in or direct-

coupled motor, or with V-belt drive, in capacities of 500 to 900 c.f.m., at 80 to 125 pounds pressure. Sizes for other pressures also furnished. Write for full information.



**CHICAGO PNEUMATIC
TOOL COMPANY**

General Offices: 8 East 44th Street, New York 17, N. Y.

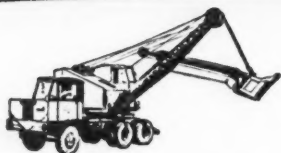
PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

IT'S BUILT TO KEEP BUSY!

TL-20 Moto-Crane's mobility + 5 boom combinations assure a full day's work—every day

THE Lorain TL-20 Moto-Crane is built for a single purpose—to keep working all the time. Traveling on a rubber-tire mounting, this unit writes its own transportation ticket between jobs at speeds up to 30 M.P.H. And what if each job does pose a different material handling problem? With interchangeable boom equipment, this "versatile specialist" can vary its attack as a shovel, crane, clamshell, dragline or hoe.

If you want a machine in the $\frac{1}{2}$ yd. class that has the knack of always keeping busy at a profit—see your local Thew-Lorain distributor now. And ask him to show you some TL-20's at work in your locality. It's a sight worth seeing if you can just keep pace with them.

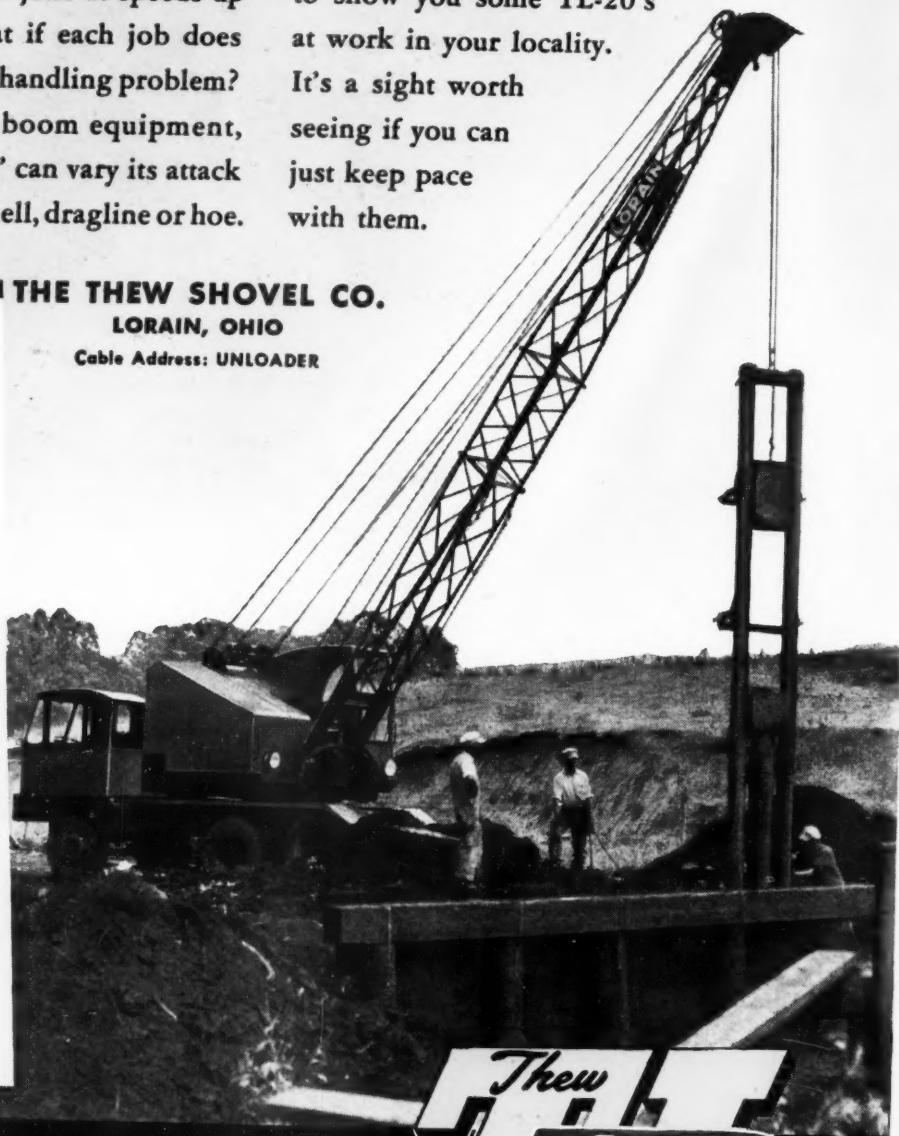


TL-20 FEATURES

- Independent Rope Crowd Shovel
- 2 Crawler Speeds (Standard)
- Unit Assembly for Easier Service
- 5 Identical Shoe Clutches
- 2 Operating Lights (Standard)
- "Full Circle" Crawler Steering
- Anti-Friction Bearings
- Drop Forged Crawler Treads
- Starter and Generator (Standard)
- 9 Rubber-Tire Mountings Available
- Interchangeable Parts
- All-Purpose Crane Boom



THE THEW SHOVEL CO.
LORAIN, OHIO
Cable Address: UNLOADER



Lorain

Thew
TL-20
Lorain



Give Old Paint, Rust, Scale a **FAST BRUSH-OFF!**

BLACK & DECKER
7" STANDARD
Portable Electric
SANDER \$60.00

7" Heavy-Duty
Sander... \$70.00

9" Heavy-Duty
Sander... \$85.00

Speed Up Sanding, Grinding, Planing, Too!

Mount a tough, longer-lasting Black & Decker "Whirlwind" Wire Cup Brush on a powerful Black & Decker Sander—and you have a handy tool for doing 100-and-1 cleaning jobs on construction equipment and materials. These husky B&D Sanders are *bears for work*, handling the toughest surfacing work with timesaving ease. You can put them to work...

(A) With "Whirlwind" Wire Cup Brushes, for removing rust, dirt, scale, grease, tar and old paint.

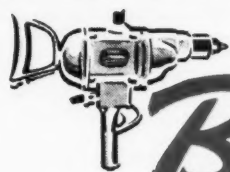
(B) With abrasive discs, for sanding any surface, from fast metal removal

to satin-smooth finishing.

(C) With saucer grinding wheels, for grinding any metal; smoothing welds; cutting off old rivets, studs and bolts. Sharpening tread cleats.

(D) With rotary gouging and planing heads, for shaping and semi-finishing lumber, working far faster than jack plane or adz.

Black & Decker Sanders are full of quality features! Be sure to read the "inside story" shown below. Then ask your nearby Black & Decker Distributor for a demonstration. Or write for free catalog to: The Black & Decker Mfg. Co., 659 Pennsylvania Ave., Towson 4, Md.



LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

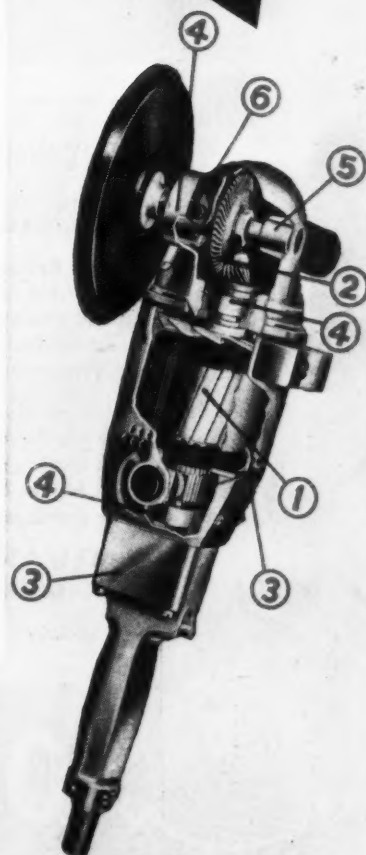
PORTABLE ELECTRIC TOOLS

Drills • Sanders • Bench Grinders • Portable Grinders • Electric Saws
Screw Drivers • Nut Runners • Tappers

Here's the "INSIDE STORY" on Black & Decker Quality!

1. Full-power Black & Decker universal motor.
2. Spiral beveled gears of heat-treated alloy, match-lapped spline-mounted for greater strength.
3. Commutator, bearings and switch sealed against abrasive dust or dirt.
4. All ball bearings on steel inserts and grease-sealed.
5. Needle roller bearing at back end of drive spindle.
6. Patented spindle lock for speed and ease in changing accessories.

The SERVICE you get out of TOOLS depends on what's BUILT into them!



OVEN TEST COOKS UP LONGER LASTING PRODUCTS



QUAKER PRE-TESTED PRODUCTS FOR THE CONSTRUCTION FIELD ARE PERFORMANCE-PROVED THROUGHOUT THE NATION

It may be called the "Oven Test," but to the buyer of Quaker Rubber Products it means producing rubber with the ability to withstand heavy static loads.

In making Quaker Rubber Hose it results in compounds of controlled specifications that will hold couplings over long periods of time . . . prevent hose from relaxing and allowing couplings to loosen. In packings, this pre-testing assures finished products that will hold their shape, will not relax, readily withstand pressures without the danger of blowouts.

This is only one of eighteen rigid tests that raw materials and finished products must pass before receiving the Quaker stamp of approval. Pre-testing provides quality and long service . . . assures worthwhile dividends for you through higher plant efficiency, lower operating costs. Call in your nearest Quaker distributor for hose, belting and packings.

QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. • New York 7 • Cleveland 15 • Chicago 16 • Houston 1
Western Territory
QUAKER PACIFIC RUBBER CO. • San Francisco 10 • Los Angeles 21 • Seattle 4

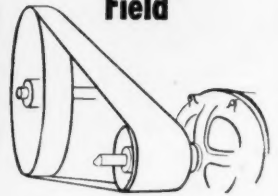


REG. U. S. PAT. OFF.

QUAKER RUBBER PRODUCTS

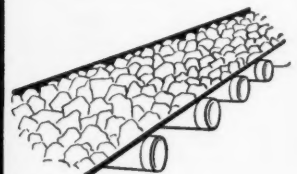
custom made for every industrial use

WHAT QUAKER Pre-Tested Products mean to the Construction Field



STEADY GRIP . . . LESS SLIP

Quaker V-belts and flat belting are pre-tested to provide plenty of grip, plenty of pull for more power. Pre-tested rubber stays flexible, withstands aging and abrasion.



RUGGED WEAR RESISTANCE

Quaker pre-tested conveyor belting resists abrasion, stress and strain under severe loads. Rubber and cotton duck are pre-tested for toughness, long-life.



LONG SERVICE AT HIGH PRESSURE

Quaker hose provides low-cost handling of steam, air, liquids, volatiles. Pre-tested rubber remains pliable, flexes easily, combats breakdown.

ENGINEERING SERVICE

When belting, hose, and packing problems bog down efficiency in your plant, call your Quaker Distributor for a quick solution.

KER
ducts

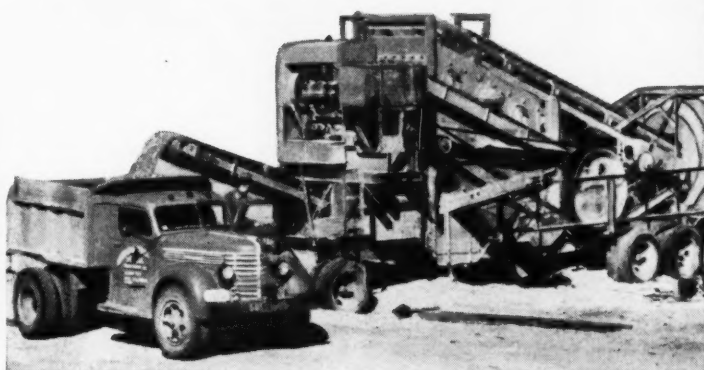
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FOR PRODUCTION AT A COST THAT LEAVES MORE PROFIT

Choose **UNIVERSAL** for ANY Crushing Requirement



The 822-Q Two Unit Portable Quarry Plant consisting of a 546-P Primary and 800 Series Double Roll Secondary. Combines flexibility and mobility with volume production.

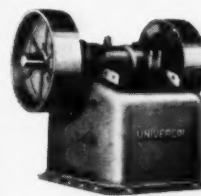
PORTABLE, SEMI-PORTABLE, STATIONARY—whatever type of plant you want for the crushing and screening of rock, gravel or aglime, UNIVERSAL BUILDS IT. Each plant is "Stream-Flo" engineered to provide that perfect balance of all units so essential to smooth operation, high output and *lower costs* per ton. Let UNIVERSAL show you how to produce at a cost that leaves more profit.

☒ Check your needs...

Rock Plants	Roll Crushers	Apron Feeders
Jaw Crushers	Revolving Screens	Log Washers
Gyrating Screens	Sand Screws	Washing Plants
Revolving Scrubbers	Lime Plants	Conveyors
Gravel Plants	Pulverizers	Bins

WRITE FOR BULLETINS

You can produce **FASTER, BETTER**
for **LESS . . .** with **UNIVERSAL**

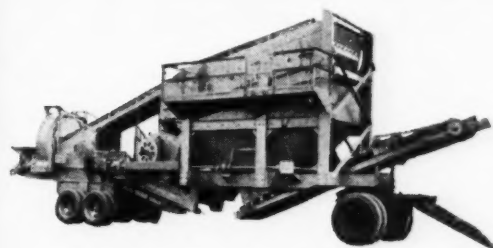


Universal overhead eccentric jaw crusher. The recognized leader of all crushing operations. Built in 4 types with plain or roller bearings. Capacities to meet every crushing need. Series "SL" illustrated.

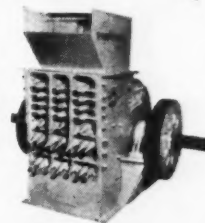
Universal double roll crushers. Star gear or chain final drive. Roller bearings, manganese steel roll shells. Feature simplicity of design, greater capacity, double safety protection against tramp material. Sizes to meet every requirement.



1800 SERIES PORTABLE SECONDARY FOR AGLIME AND ROAD ROCK



Recommended for use behind the 546-P Primary for volume production of aglime and road rock. Features the UNIVERSAL welded steel plate roller bearing pulverizer. Capacities up to 180 tons road rock and aglime per hour.



UNIVERSAL ENGINEERING CORPORATION

329 8th STREET N. W. A Division of PETTIBONE MULLIKEN CORPORATION CEDAR RAPIDS, IOWA

FIRST IN BASIC ENGINEERING DESIGN SINCE 1906

NOW...an electric power pump for your hand-operated hydraulic systems

FAST, SIMPLE CONVERSION BRINGS SPEED, POWER AND GREATER ECONOMY

This new Blackhawk P-182 Pump quickly and economically converts your hand-operated Porto-Power systems to power operation. The amazing features of this low-cost unit are designed to cut costs and time and bring you many other outstanding benefits.

Conversion from hand to power operation is simple—only one operation is needed—just connect the hose from the ram to the P-182 instead of the hand pump and you're set to go to work.

Handy, portable P-182 is ideal for operating Porto-Power Pipe Benders—also is adaptable to *any* hydraulic system and any job requiring up to 10,000 P.S.I.

Practical "service-proved" design of P-182 incorporates control valve, motor, pump and reservoir into *one* package—a "profit package" for your production and maintenance work.

Ask your Industrial Supply Distributor for full information on the New P-182 or write for bulletin.

A Product of **BLACKHAWK MFG. CO., Dept. P2398**
Milwaukee 1, Wisconsin



New Blackhawk
Electrically-Driven
Hydraulic Pump

YOU CUT COSTS 3 WAYS

P-182 IS ADAPTABLE TO ANY JOB.

- 1 Triples Ram Speed**—Full ram travel is gained with the P-182 in one-third the time it takes for hand operation. This means a 66⅔% time saving in manhours alone, plus increased production.
- 2 Handles More Rams**—One P-182 can be adapted to handle from 2 to 25 rams at one time. This means faster work and lower labor cost. This adaptability is particularly *practical* on production setups.
- 3 Eliminates Fatigue**—Fingertip control makes the P-182 effortless to operate. This cuts job time, eliminates slow-downs due to fatigue. It works at top speed all day—turns out more work.



Pipe Bending



Machinery
Lifting and
General
Maintenance
Work



Pressing,
Production
Work, etc.



Gauge—
Equipped for
Measuring



BLACKHAWK

Proven Facts

CARSET JACKBITS

EXCLUSIVE
Ingersoll-Rand

-  **Drill Faster**
-  **Save Powder**
-  **Boost Tonnage**
-  **Reduce Maintenance**
-  **Wear Longer**
-  **Rotate Freely**



Features

Carset Bits are field proven From Maine to Texas, from Washington to Alabama Carset Bits are working, shift after shift, in hard rock and in soft, on Dams, Quarries, Tunnels and in Mines Everywhere it's the same story . . faster drilling, deeper runs, longer feeds, lower costs. In ground where steel bits are drilling two to ten feet per bit usage, Ingersoll-Rand Carset Jackbits are averaging two hundred to more than a thousand feet. They are the talk of the Industry.

Buy Ingersoll-Rand Carset Jackbits with confidence, team them up properly with the correct Ingersoll-Rand Drifters, Stoppers, Jackhammers and Wagon Drills for highest overall efficiency. They are designed, built, sold and serviced by men who know rock drilling.

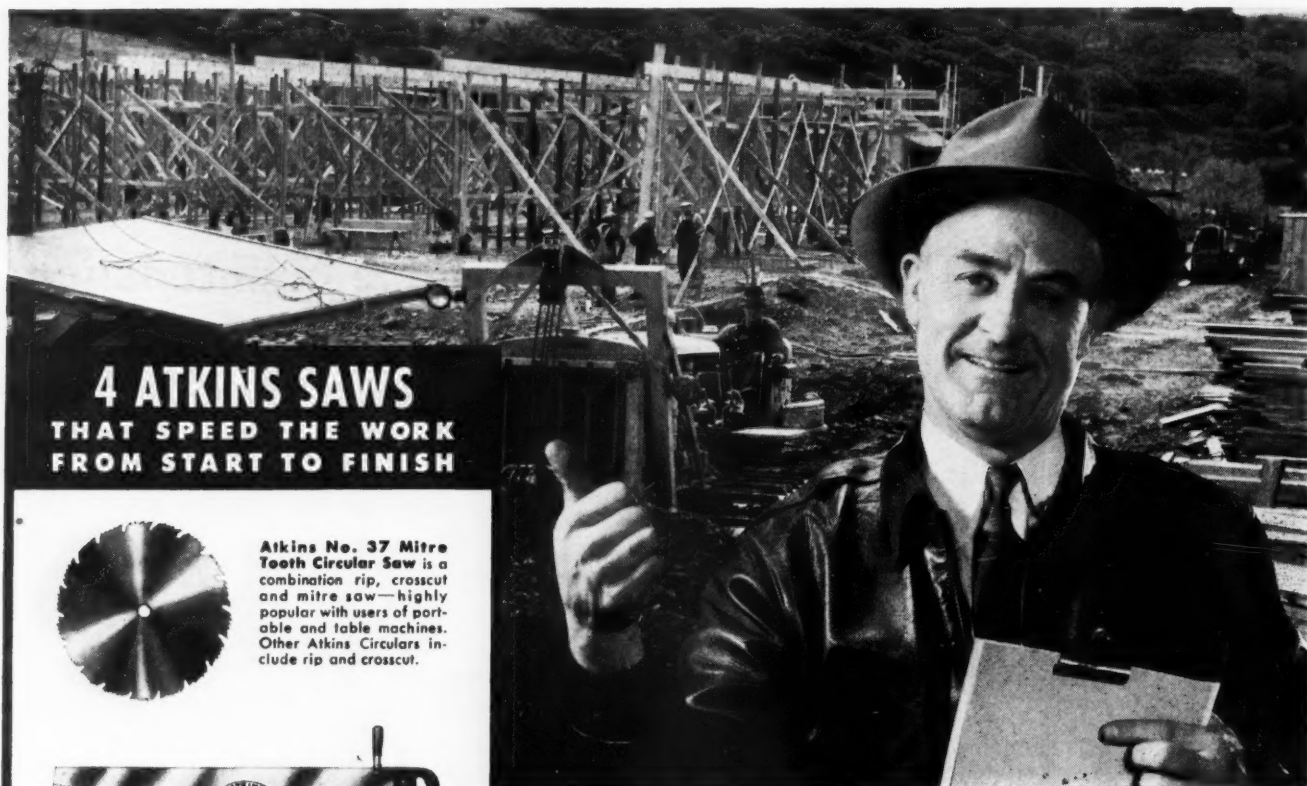
Jackstud attachments are setting new standards in rod life. For best results use them with the remarkable new alloy drill steels, made to Ingersoll-Rand specification 159.

Ingersoll-Rand

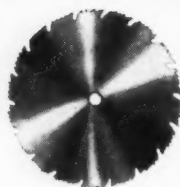
15 BROADWAY, NEW YORK 4, N. Y.

"Believe Me-ATKINS

save us money at every stage of the job"



4 ATKINS SAWS THAT SPEED THE WORK FROM START TO FINISH



Atkins No. 37 Mitre Tooth Circular Saw is a combination rip, crosscut and mitre saw—highly popular with users of portable and table machines. Other Atkins Circulars include rip and crosscut.



No. 390 One-Man Crosscut. Taper ground, clears easily, runs fast. Tuttle tooth, straight back blade is hardened and tempered. Needs very little set. Hardwood handle with large grip. Filed and set, ready for use.



Atkins No. 3000 Handsaw. The latest addition to the Atkins line of handsaws for every use. Has new "Perfect-Grip" Plastic Handle that brings grip closer to the blade and gravity center. Light but stiff "Silver Steel" blade, true taper ground. Straight back, ship point.



Atkins No. 10 Easy Grip Hack Saw Frame. Black rubber handle gives complete control of the stroke, protects hands. Cold-rolled rust-resisting steel frame adjustable 8 to 12 inches. Atkins "Blue End" Hacksaw Blades are tough, fast-cutting, long-lasting.

Yes, it's true; Atkins Saws keep construction sawing costs where they belong — down at sub-basement level.

For every sawing job there's a particular Atkins Saw that cuts faster, easier, cleaner — that represents all the skill, knowledge and improvement gained in 92 years of saw-making experience. Because of the characteristics of Atkins "Silver Steel", these saws stay sharp longer and last longer. When the pressure is on and the backlog high, you can count upon those extra-keen teeth to keep cutting smoothly for record periods. All this adds up to these important factors on your ledger sheets: lower labor costs, less time out for sharpening, greater cutting output.

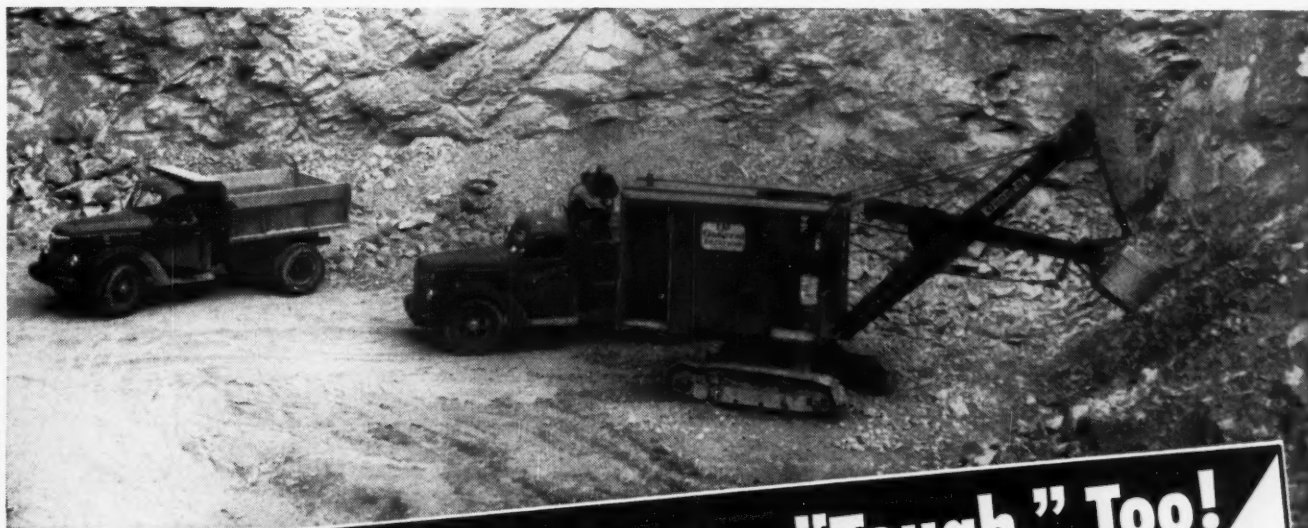
Invest on the profit side of the ledger. Check with your industrial distributor now on the Atkins Saws you need.



E. C. ATKINS AND COMPANY • Home Office and Factory: 402 S. Illinois Street, Indianapolis 9, Indiana
Branch Factory: Portland, Oregon • Branch Offices: Atlanta • Chicago • New Orleans • New York • San Francisco

MAKERS OF BETTER SAWS FOR EVERY CUTTING JOB

This "Old-Timer" has Outlived Many Fleets of Trucks



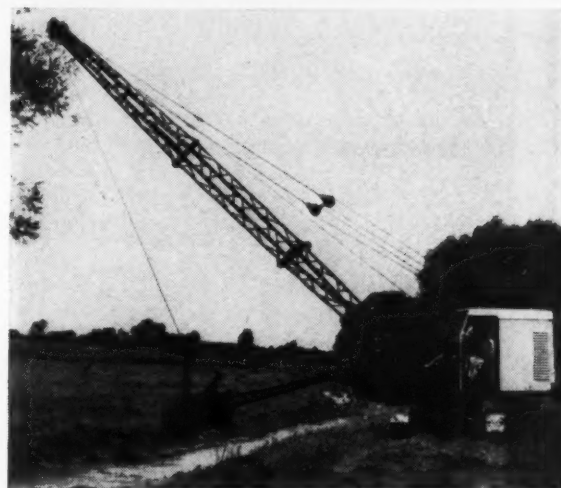
The New *Generals* Are "Tough," Too!

FIFTEEN YEARS AGO this $\frac{5}{8}$ -yard General was given a "tough" assignment—in the clay pit of Linhardt Bros., Mt. Sterling, Mo. Clay rock, so hard it has to be dynamited and so slippery when wet you can't get a footing on it, is difficult to handle. Slick, heavy, rolling boulders are elusive . . . hard for an operator to pick up.

But this old General has been doing the job satisfactorily, efficiently, ever since it started. It still takes a full dipper every swing—can load a 5-yard truck with only seven passes. During its long service, Linhardt Bros. have replaced truck fleets many times, but the General keeps right on loading!

★

New *Generals* are "tough," too . . . give the same dependable performance, and, in addition, incorporate numerous advancements in construction and design that mean extra economy of operation, extra profits in use. Write for information and specifications.

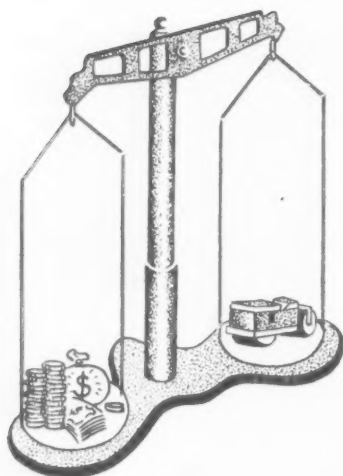


POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. *O-G* THE GENERAL CO.
EXCAVATOR

MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • $\frac{3}{8}$ TO 2 $\frac{1}{2}$ CU. YD. • CRAWLERS & MOBILCRANES



the Balance
**IS IN YOUR FAVOR
 WITH MODERN**



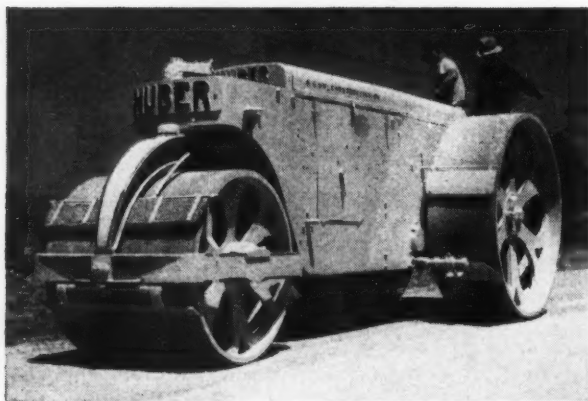
ROAD MACHINERY



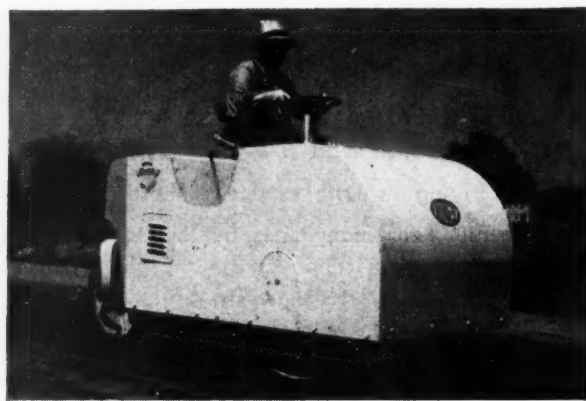
Huber's versatile Road Maintainer—a lift loader, berm leveler, bulldozer, patch roller, snow plow, or rotary broom all in one.

Today's conditions demand that your operation's budget balance out. Modern Huber road machinery will help you do better than that—the efficient, result-producing Huber line will actually tip the balance in your favor.

Road men, from maintenance crews to new road contractors recognize the "extras" that are built into every piece of Huber equipment. Plenty of power...economical operation...dependable performance...and the ability to do any job are Huber traits that point to more profitable road operations for you. Write today for bulletins on the Huber equipment that will best serve you.



Huber's always dependable 3-Wheel Rollers—built in sizes, from 5 to 12 tons, suited to any rolling operation.



Huber's highly maneuverable Tandem Rollers lend themselves to many special tasks. Variable weight models from 3 to 14 tons.



THE

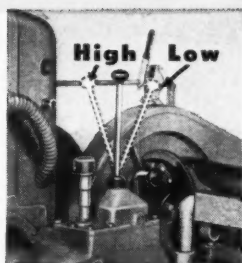
MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER

3 Wheel • Tandem
**ROAD ROLLERS
 and
 MAINTAINERS**

2 SPEEDS

Just shift a lever to "Low Gear" for power, "High Gear" for speed with lighter loads.

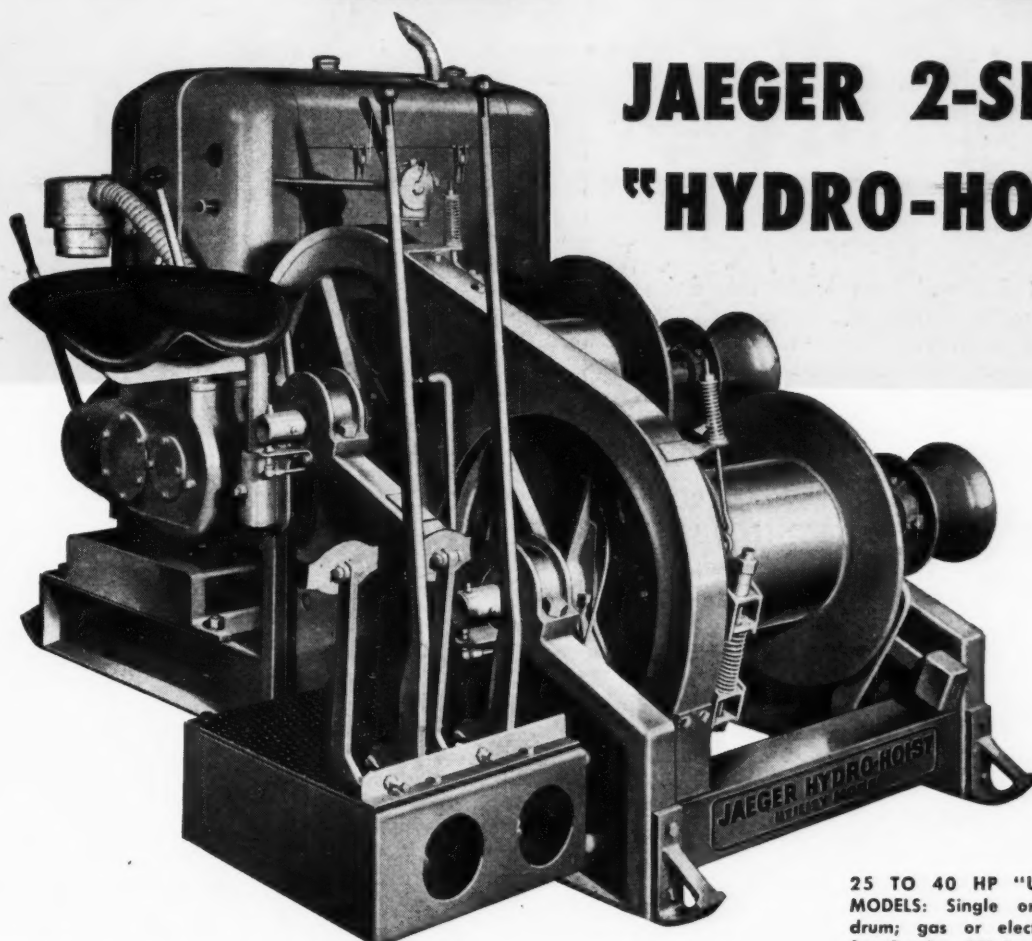


HYDRAULIC FINGER-TIP CONTROL

for faster, easier, more accurate operation — just like \$25,000 cranes.



JAEGER 2-SPEED "HYDRO-HOIST"

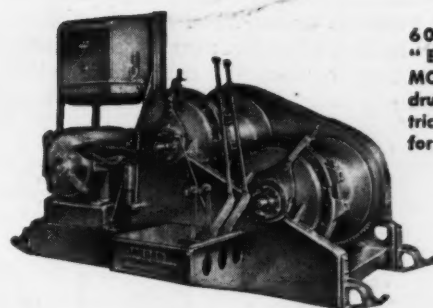


25 TO 40 HP "UTILITY"
MODELS: Single or double drum; gas or electric. Ask for Catalog HU-8.

It's labor-saving for your operator; it's money-making for you! With Jaeger hydraulic controls at his finger-tips the hoist operator "feels" his load perfectly but never has to fight its weight. He handles the work faster, places it more accurately—sets your whole job a quicker pace.

2-Speed Automotive Transmission has a double advantage—(1) gives you the flexibility of low and high gear performance; (2) permits quick interchangeability of power from gas or diesel engine to squirrel cage electric motor, all at standard 1800 rpm.

All-steel construction (no more broken side frames or drum flanges), instant releasing hydraulic clutches with single outside adjustment, air-cooled hydraulic brakes, many other advanced features. See your Jaeger distributor, or ask for Catalog.



60 TO 100 HP "ERECTORS"
MODELS: Up to 3 drums; gas, electric or diesel. Ask for Catalog HE-8.

THE JAEGER MACHINE CO., COLUMBUS 16, OHIO

regional offices: 1504 Widener Bldg. Philadelphia 7 226 N. La Salle St. Chicago 1 235 American Life Bldg. Birmingham 1

PUMPS • AIR COMPRESSORS • TOWERS
PAVING MACHINES • MIXERS • TRUCK MIXERS

Let Morse grease the rails for your tough jobs too!



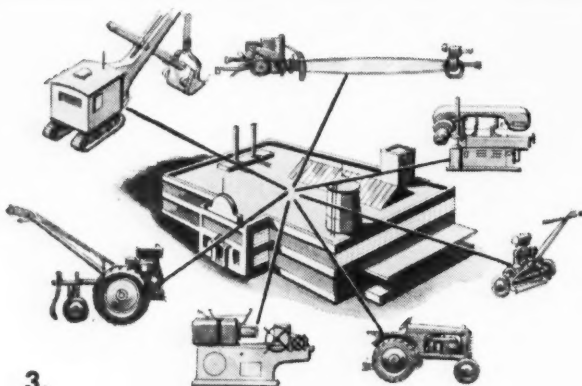
1.

Sc-r-r-ee-ch! Railroad men know this noise means that expensive train wheels and rails are wearing away on curves. To prevent this wear, automatic greasers were installed to lubricate wheels and rails. Old-style ratchet type clutches were tried, but slipped or didn't feed grease right. American Brake Shoe Company's Ramapo Ajax Division solved this knotty problem...



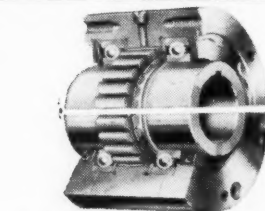
2.

They now use Morse-Formsprag Clutches. The positive action of Morse-Formsprag Clutches is far superior in performance, dependability and service over the old ratchet type. *M-F Clutches engage instantly; allow no back-slip; feed grease to every passing wheel.* Other complex operations on your products may call for Morse-Rockford Friction Clutches...

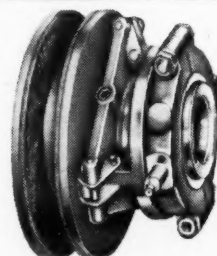


3.

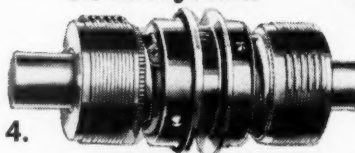
Morse clutches fill almost every need you can imagine. Can the sales and mechanical value of your own products be enhanced by using Morse clutches? Leading manufacturers of such items as construction equipment, cultivators, saws, pumps, lawn mowers and machine tools have bettered *their* products with Morse clutches. How about you? Do this now...



Morse-Formsprag Full Complement Over-Running Clutches



Morse-Rockford Over-Center Small Diameter Clutches



Morse Pullmore Friction Clutches

4.

Write for expert clutch engineering aid and consultation. For new ideas, send for clutch catalogs: Morse Formsprag Clutch Catalog, No. C11-48; Morse Pullmore Clutch Catalog, C31-47; Morse-Rockford Clutch Catalog, SDOC. Address: Morse Chain Company, Department 212, 7601 Central Avenue, Detroit 8, Michigan.



Morflex Couplings



Roller Chain Couplings



Silent Chain Drives

MORSE

MECHANICAL
POWER TRANSMISSION
PRODUCTS



Morflex Radial Couplings

MORSE CHAIN COMPANY • DETROIT 8, MICHIGAN

oo!

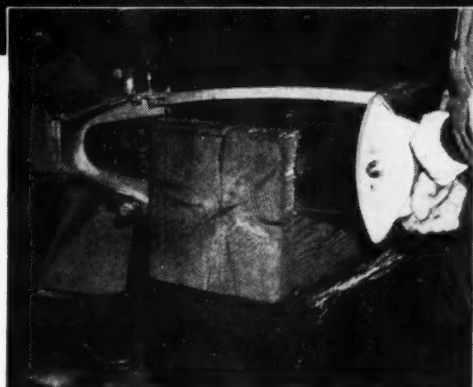
Only 27 lbs.

But Look at the Performance You Get



With a

HOMELITE ELECTRIC CHAIN SAW



When very accurate cuts are necessary a helper's handle is easily attached to insure precise cuts at any angle.



Small, compact and easily handled, the Homelite Chain Saw gets in and cuts where larger saws are unworkable.

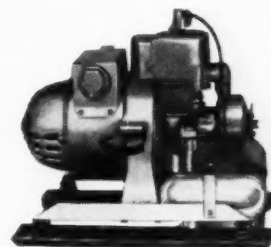
Here, for the first time, is a small saw that does the work of a big saw . . . a modern, high cycle electric chain saw that can be handled by one man with complete ease. Extremely fast and efficient, this saw cuts heavy timber and trees up to 36" diameter in amazingly low time. And because of its light weight . . . only 27 lbs. complete . . . it is easily operated no matter where your cutting is necessary.

Another important point, with a Homelite Chain Saw you get electric chain saw efficiency everywhere . . . even in remote locations . . . for you operate your Homelite Chain Saw with a Homelite Dual Purpose Generator, a *carryable* generator that can be picked up and easily transported to any job at any location.

Your Power Unit For a Plus Performance

A Homelite Dual Purpose Generator is really a multi-purpose generator. You can use it not only for your Homelite Chain Saw but for operating both high cycle and standard universal 110 volt tools plus floodlights on emergency night work.

See how this is done. Write, today, for our new Homelite Chain Saw bulletin.



HOMELITE CORPORATION

1009 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

MANUFACTURERS OF HOMELITE CARRYABLE PUMPS • GENERATORS • BLOWERS • CHAIN SAWS



**America's Largest Builder
of Material Handling Buckets**

*All
Purpose*

**SHOVEL
PULL SHOVEL
DRAGLINE
CLAMSHELL**

FRONTS, BOTTOMS, SCOOPS and TEETH shown in color on buckets are 14% manganese steel developing tensile strength up to 120,000 p.s.i. This high percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.

Experience Counts. See your shovel man or equipment dealer about PMCO Buckets and Dippers.

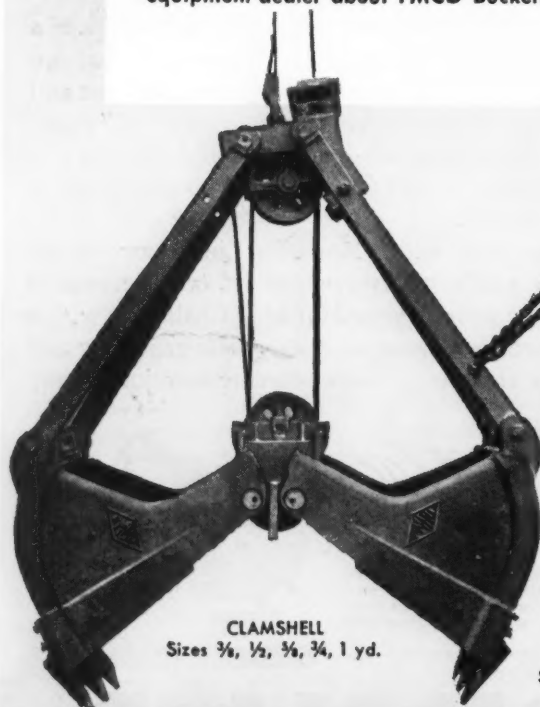


DRAGLINE

Perforated Sizes $\frac{3}{4}$ yd. to 2 yds. 20%-40% lighter than other makes.
Solid Sizes $\frac{3}{4}$ yd. to 2 yds.
Mine Stripping Sizes 2 yds. to 9 yds



PULL SHOVEL
Outside Cutter Widths:
21", 26", 31", 36", 39"



CLAMSHELL
Sizes $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 yd.



SHOVEL
Sizes $\frac{3}{4}$ yd. to 18 yds.

On the $\frac{1}{2}$ yd. and $\frac{3}{4}$ yd. Shovel, Pull Shovel, and Dragline Buckets, all teeth are interchangeable—a great advantage to operators.



"Quality Since 1880"

**PETTIBONE MULLIKEN CORP. CHICAGO 51,
U. S. A.**

WE OPERATE THE LARGEST AND MOST COMPLETE MANGANESE STEEL FOUNDRY IN THE UNITED STATES

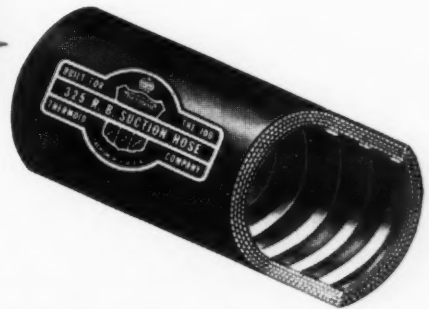
Thermoid Water Suction Hose

Made in a Type to Suit Every Job

Water Suction Hose is generally subjected to rough usage. Thermoid has studied carefully the service conditions under which it is used and has designed several types from which you can pick the one best suited to the job you have to do.

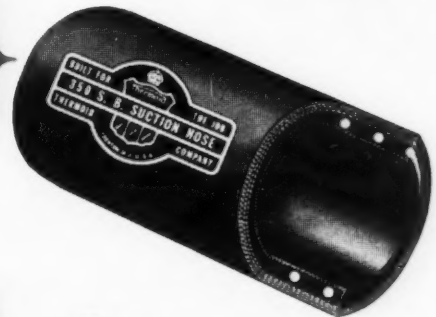
For the Toughest Kind of Duty Use Thermoid #325 Type

This hose is made in smooth or rough bore. Use smooth bore when sand, dirt or other abrasives are in the water to be handled. Use the more economical rough bore type when the water is free of abrasives. Each type has a high quality tube, strong wire reinforcing, then plies of specially woven duck with a weather and abrasion resisting cover. Supplied in sizes 1 1/4" to 6" in lengths up to 50 ft.



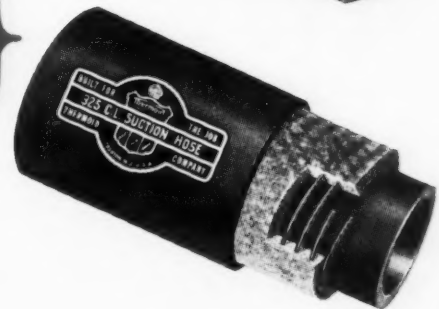
For Less Severe Service Use Thermoid #350 Type

Somewhat lighter in construction, but with plenty of long life quality for less severe jobs. This hose comes in smooth or rough bore, wire and duck reinforced, with weather and wear resisting cover. Supplied in sizes 1 1/2" to 6" and in lengths up to 50 ft.



For Normal Light Duty Use Thermoid Type #325-CL

It's an economical hose for normal light duty service. The water way is smooth, resistant to action of gritty particles, the reinforcement of high carbon steel wire interwoven with heavy cotton yarn, cover of sufficient thickness and strength to resist abrasion and rough handling. Furnished in sizes of 1 1/2" to 6", in lengths up to 50 ft.



Other types of Thermoid Suction Hose include Oil Suction, Sand Suction, Agricultural, Hard Rubber and Fire Engine. Catalog information on request.

The Thermoid line includes: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Custom Molded Products • Industrial Brake Linings and Friction Materials.

Thermoid
Company

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U. S. A.
Industrial Rubber Products • Friction Materials • Oil Field Products

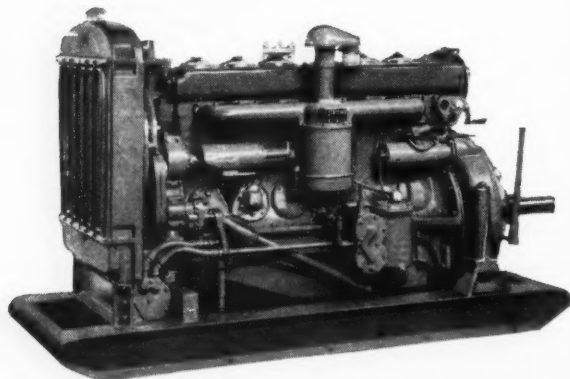
Why is it better to have
4 VALVES PER CYLINDER?

**the
MURPHY
DIESEL
has 4 valves
per cylinder**

Comparing Murphy Diesel 4 valve design with the conventional two valve design of equal total valve area, you will see that the 4 valve arrangement provides 41.4% more circumference. *Since virtually all valve heat is dissipated through the metal to metal contact area of the seat, 4 valve design offers 41.4% more area for heat dissipation.* Likewise, 4 valve design means escaping heat has a shorter distance to travel ... with equal valve lift 4 valve design provides 41.4% greater port area for intake and exhaust breathing. For Murphy Diesel owners it all adds up to higher power output and better all-around performance and explains why Murphy valves rarely, if ever, have to be ground.

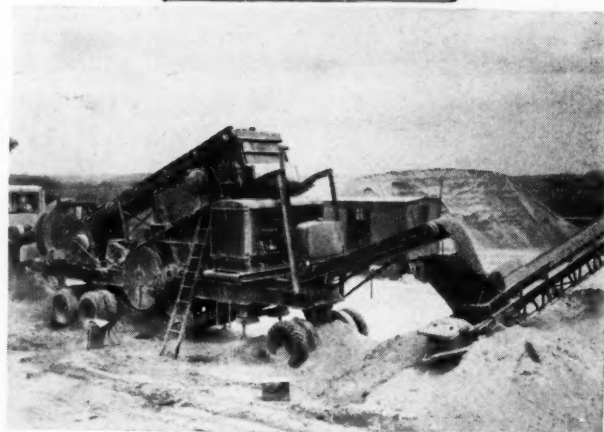
Get full details from your Murphy Diesel Dealer and ask for a copy of the booklet "7 Questions to Ask a Diesel Engine Salesman."

MURPHY DIESEL COMPANY
5339 W. Burnham St., Milwaukee 14, Wis.



LOWEST ULTIMATE POWER COST

- MORE POWER
- GREATER BREATHING CAPACITY
- LOWER VALVE TEMPERATURES
- LONGER VALVE LIFE



Above—This 150 H.P. continuous, 180 H.P. intermittent, Murphy Diesel powers a rock crusher owned by Gallagher and Nelson, Madison, Wisconsin.

Murphy Heavy Duty "True" Diesel Engines and Power Units, 90 to 215 H.P., Generator Sets, 60 to 115 K.W., A.C. or D.C.

**MURPHY
DIESEL**



Breathtaking views such as this will thrill the tourists. The drillers, however, are more concerned here with getting blast holes into the extremely tough volcanic rock of various types.

HIGHWAY CARVED ALONG STEEP OREGON SLOPES

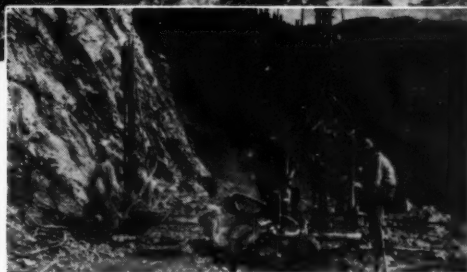
One of the toughest construction jobs under way in the Pacific Northwest, the final 9.8-mile link of the new North Santiam highway is nearing completion at a cost of nearly \$4,000,000. Involving the removal of more than a million cubic yards of rock, it will replace the old road which will soon be inundated by the North Santiam River to be impounded by Detroit Dam.

Unusual problems are being faced by the Kuckenberg Construction Company in hanging this highway on the breakneck slopes of river canyon rock. Although 80 pct of the excavation is rock, the blasting has had to be done with unusual caution because of the hazards of working on steep grades, the danger of damaging the bedrock at the dam site, and the fact that a railroad and the present highway lie further down the slope.

In keeping the rock-excitation work on schedule, the contractors have relied on Bethlehem Hollow Drill Steel for the various types of drilling employed. Like so many other construction men, they know they can bank on this fine steel for dependable drilling.



BETHLEHEM HOLLOW DRILL STEEL



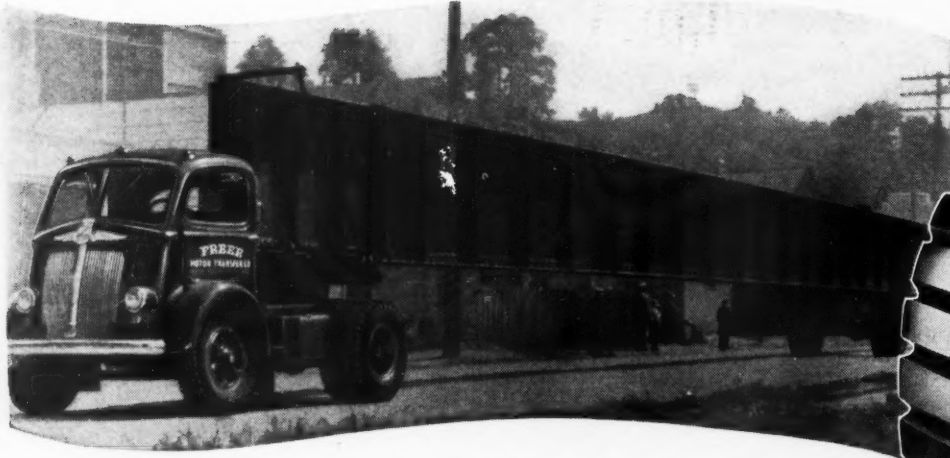
Rugged country looms in the background as wagon drills run 20-ft holes into the rock for spring shots.

This mountain trail is typical of the terrain. Under the supervision of the Public Roads Administration, the general contractor is Kuckenberg Construction Co., of Portland. Hill Lind is job superintendent.



BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation



Putting a load like this on the General L. C. M. is *good* business. For this tire is the "strong man" of the industry. In one operation after another it has proved its ability to move tremendous loads over soft or hard surfaces without breaking down or getting clogged up. The extremely thick, tough tread cushions the tire against cuts and snags . . . protects the carcass from hazards common to construction work. With every turn of the wheel on a tough job this longer wearing, harder working, stronger tire saves you money.



To move loads and equipment
Faster and at Lower Cost...have
your General Tire dealer specify, install
and service the tires for the job!



Specialists in any field do a better job. That's why this combination of power wheel tires and rolling wheel tires, designed specially for tractor graders, save time and money. The big, low pressure tractor grader tire rides high in sticky going . . . rolls easily through mud, sand or gravel . . . cleans and grips forward or backward . . . withstands rocks, ruts and ridges. For front or trailing wheels of regular, or leaning wheel type graders the free rolling, tapered continuous ribs of the ribbed grader tire resists side slip, makes steering easy.



THE GENERAL TIRE & RUBBER CO.

AKRON, OHIO

LOOK TO

P&H

FOR ADDED VALUES

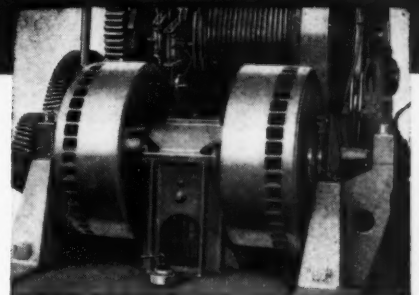


THE SWING'S THE THING!

And here's the kind of swing that's sweet music to production men on steady digging. It's the Magnetorque on P&H 1055 that transmits power for swinging—without mechanical contact—without wear—without time lost for clutch adjustments—without the high cost of lining replacements.

There's nothing to compare with the P&H Magnetorque swing—with its smooth, velvety action—with its simple construction.

If you haven't seen the 1055 in action, write us. We will gladly tell you where the nearest machine is located.



THE P&H MAGNETORQUE transmits power for swing electro-magnetically—replaces swing frictions—eliminates the maintenance and repair work that goes with them. The Magnetorque unit will last the life of the machine.

P&H EXCAVATOR
4494 W. National Ave.
Milwaukee 14, Wis.
HARNISCHFEGER
CORPORATION
ENGINEERS, ELECTRIC CRANES, AND MORE

If you want to move **BIG YARDAGE** *fast* your equipment must be rugged!

BEAT THE STEEL SHORTAGE

— use steel that **DOES** more!

By replacing carbon steel with U·S·S COR-TEN or MAN-TEN where economically applicable, you can:—(1) Produce as many as one-third more units from every ton of steel used. (2) Make better products—lighter, longer-lasting and generally more profitable to the user. (3) Satisfy more customers. (4) Get these benefits at little or no increase in cost per unit.

To help you use U·S·S High Strength Steels to advantage in *your* products, immediately—and with the least change in shop methods—we have a special staff of metallurgists and engineers thoroughly familiar with what these steels can do. Phone, wire or write our nearest office.

THAT's a basic requirement. Even if you build it larger, increase its horsepower, make it easier and more convenient to operate, your construction equipment will still not give you *maximum* production unless it has enough "guts" built into it. Unless it has the toughness and strength to safely absorb the grief of high speed operation and heavier loading, it just cannot be operated at top capacity—at least, not for long.

That is why so much of today's high-production earth-moving equipment is built with U·S·S High Strength Steels. With these superior steels you can obtain *all* the properties that assure durability and dependability under tough service con-

ditions. They have a yield point 1½ times higher than ordinary structural steel. They provide greater resistance to shock, impact, vibration and fatigue. They have greater abrasion resistance . . . they can provide high resistance to atmospheric corrosion. In addition they have good formability, they are readily weldable—and they are low in cost.

To help you use these steels most efficiently we can place at your disposal a wealth of practical engineering and fabrication data, based on more than 12 years' experience in applying U·S·S High Strength Steels in construction equipment famous for its stamina and performance.

Write for complete information.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO • NATIONAL TUBE COMPANY, PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

8-1302



U·S·S HIGH STRENGTH STEELS

U·S·S COR-TEN • U·S·S MAN-TEN • U·S·S MANGANESE-NICKEL-COPPER

UNITED STATES STEEL

It saves up
to \$36 daily

The BELL Prime Mover



★ PATENTS AND T. M. REG. PENDING. COPYRIGHT, 1948



Bell Prime Movers combine the functions of giant concrete buggies, half-ton platform trucks, and baby bulldozers . . . enable one man to do the work of four.

● Here are just a few examples of how Bell Prime Movers pay for themselves in an amazingly short time. If other companies can make these savings, so can your company . . .

Milwaukee. A building contractor is saving at least \$36 daily by pouring concrete with only one Prime Mover. Another uses Prime Movers to haul broken concrete and asphalt . . . two men with Prime Movers do the work of four men with concrete buggies.

New York City. This contractor is moving stone up four ramps to a height

of 28 feet. His Prime Mover climbs these 28-degree ramps with half-ton loads. He saves two man-days per day by mechanizing this job with a platform-equipped Prime Mover.

Buffalo. On this job, six Prime Movers are being used to pour concrete on a multi-story project. While two are loading, two are riding the hoist, and two are pouring. Three man-days are saved each day by each machine. The Prime Mover also takes as much bagged cement in one trip as 10 men can carry by hand.

Write for additional case histories and facts . . . as well as the names of nearby distributors who sell and service the Bell Prime Mover.

A Few Features

- bucket holds 10 cubic feet . . . 18 with sideboards
- 50-inch scraper blade
- 9-square-foot platform body
- gear driven . . . no belts or chains
- clutch, engine, transmission fully enclosed . . . run in oil

A PRODUCT OF
BELL Aircraft
CORPORATION



BELL AIRCRAFT CORPORATION
Post Office Box 1C-9, Buffalo 5, New York

Please send me additional facts about the Bell Prime Mover.

Name..... Address.....

Company.....

City, Zone, and State.....

Keeps the big jobs rolling-on time!

MORE and more equipment operators choose this tire to keep big loads moving right on schedule. It's Goodyear's Earth Mover All-Weather—the tire specifically designed and engineered to roll yardages right along at rock-bottom cost. For

the wheels of drawn vehicles this tire is “right”—“right” for easy rolling, because its wide, rounded contours provide maximum flotation, prevent deep penetration of the ground surface.

Fact is, Earth Mover All-Weather tires—like *all* Goodyear work

tires—are first choice with users. And they *stay* first choice because they keep on delivering low-cost, long-life performance. That's why year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind.*



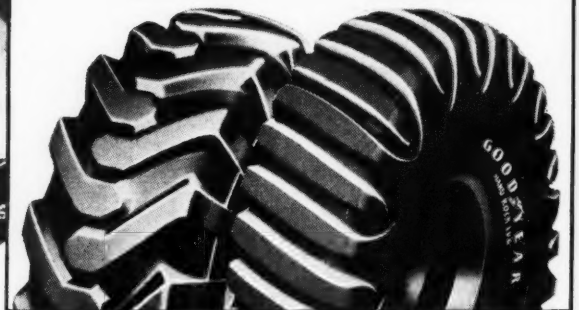
EARTH MOVER ALL-WEATHER for drawn vehicles and general traction

**BUY and SPECIFY
GOODYEAR**
—it pays!

A right tire for each job

EARTH MOVER SURE-GRIP
for maximum traction
on drive wheels

HARD ROCK LUG
for super-stamina in
all rock work



All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company

GOODYEAR

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND



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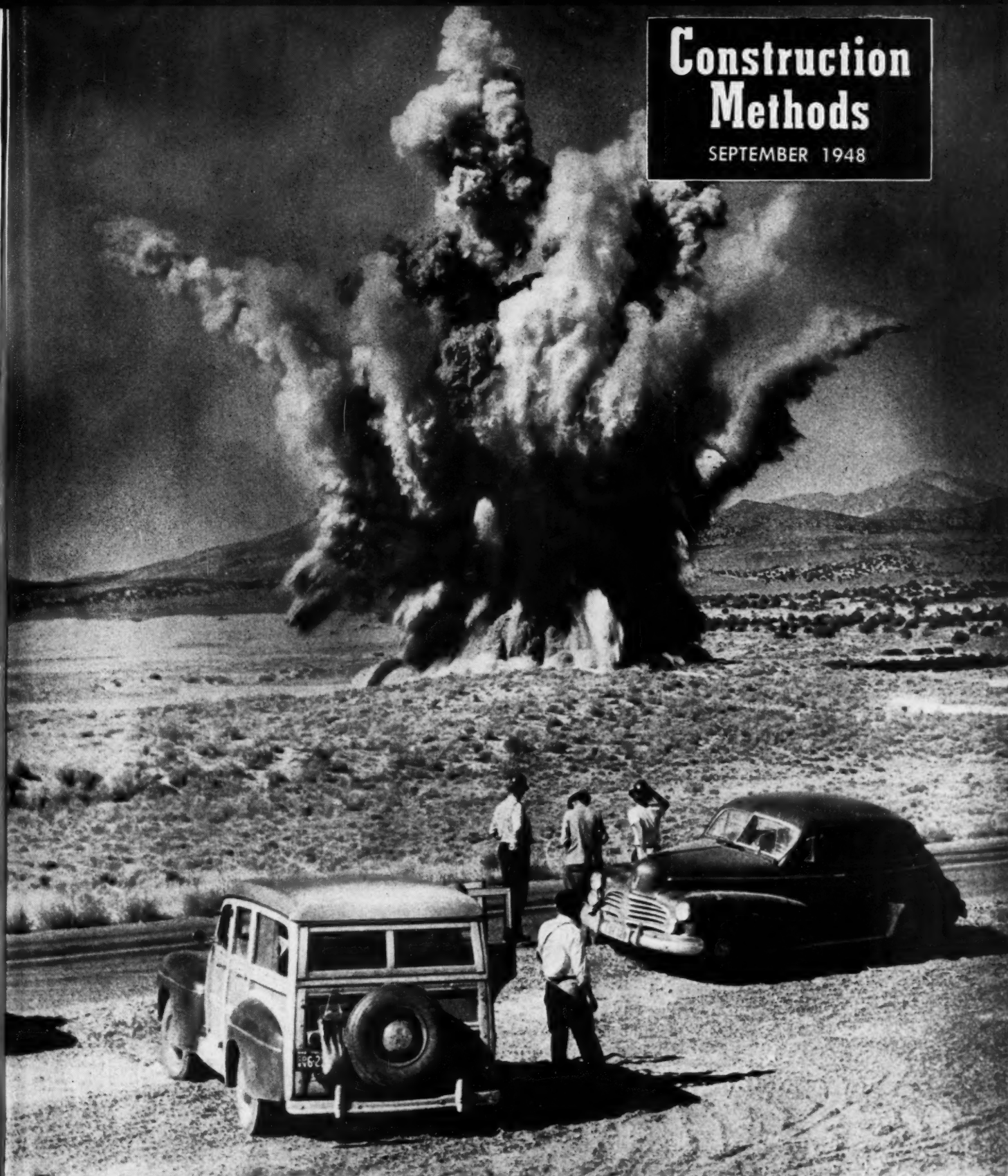


ubber Company



Construction Methods

SEPTEMBER 1948



Big Boom In Utah

A TON AND A QUARTER of T.N.T. explodes in the desolate Dugway area of Utah, 90 mi. southwest of Salt Lake City, to open the U.S. Corps of Engineers extensive underground explosion test program. Current tests are being conducted in different types of ground at Dugway and Castle Dale, Utah, and Unaweap Canyon, Colorado, to determine effects of explosions on underground structures. Results are calibrated by an elaborate system of gages and instruments, many of them electronic gadgets.

Lieut. Gen. Raymond A. Wheeler, Chief of Engineers, is in general charge of the program. Tests are being conducted by the Sacramento District, Corps of Engineers, with Col. Joseph S. Gorlinski, District Engineer, in direct charge. Morrison-Knudsen Company, Inc., has the contract for the explosive work, with J. N. Wells and H. L. Leventon in charge. Several consultants, universities and government agencies are cooperating in planning and interpretation of data.





Heavy Crown Bars at Every Set Makes . . .

Tough Tunneling at Aspen

WESTERN WYOMING'S blocky, treacherous shale, interspersed with sandstone ledges, makes the 6700-ft. Union Pacific R.R. tunnel at Aspen just about the toughest railroad bore driven for many a moon. For wearying round after round heavy timber crown bars up to 8x10-in. size must be laboriously sledged into place over steel timbering sets from 1 to 7 ft. apart to hold the roof. Ground is so soft in some places that special air-driven augers replace the usual drifters in drilling out the round.

Veteran tunnel driver Harry Carleton, project manager for Morrison-Knudsen Co., Inc., contractor on the project, and his old-time superintendent, Lowell (Blackie) Thomas, went a long way in reducing driving difficulties by designing a cantilever rolling top

deck for the jumbo, which permits installation of top steel and crown bars while mucking out of the round proceeds safely and unmolested below. The cantilever deck extends 18 ft. beyond the front end of the fixed jumbo structure, carrying a solid working platform right up against the face. Carleton gives Thomas full credit for the idea. John Hale, master mechanic, worked out the details and built the rig.

The device is so simple, yet so slick in operation that it is a wonder someone didn't think of it long ago. Not only does the platform give a working base, but it affords full protection to men below. Carleton says he will never drive another tunnel without it, regardless of type of ground encountered.

The new tunnel, which roughly parallels the old 5,941-ft. single-track Aspen tunnel driven in 1901, will open up the only single-track bottleneck in the entire Union Pacific main line from Omaha to Salt Lake City. It is a single-track bore, 16x26-ft. finished cross-section inside of concrete lining, excavated to 22x31 ft. Quantities include 187,000 cu. yd. tunnel excavation, 53,500 cu.yd. concrete lining, and 5,000 tons steel reinforcing. At the west end is a 620,000-



CANTILEVER ROLLING TOP DECK of Aspen Tunnel jumbo extends over muck pile to face, permitting installation of top steel and crown bars simultaneous with mucking operations. This view is from the back end, with rolling platform extended forward in opposite direction.

UPRR Photo



STEADY AS YOU GO is watchword in lagging and back packing along tunnel walls just below springline in a shale section. This crew is working off jumbo middle deck, carefully placing timbering to shore up every square foot of treacherous shale. UPRR Photo

ORIGINAL 3-DECK JUMBO was built just inside east portal to check clearances. Pipeframe carrying columns and bars mounting 13 drifters overhangs front end of main structure; brackets extend top platform to rear. Later, top of rig was modified to include cantilever rolling platform. Portal section, driven by heading-and-bench method, was supported with wood timbering; top segments rest on wall plates. UPRR Photo



yd. approach cut 80 ft. deep; the east approach is on a 250,000-yd. fill 2,000 ft. long.

The tunnel pierces a spur of the Uinta Mountains at El. 7,200 in a bleak, uninhabited area 16 mi. east of Evanston, Wyo. A camp, school, power line and 12 mi. of road had to be built to serve the project. Camp shops and offices include 14 Quonset huts, 12 aluminum-clad buildings, a trailer village, and three discarded railroad coaches, one fitted up for a school.

Morrison-Knudsen opened up the east portal with intention of driving the entire tunnel from that end. Heading-and-bench system with wood timbering was used at the start through the clay overburden, soon giving way to full-face driving and steel supports. As progress was slow because of the shale sections requiring full crown bars, exploration was started at the west end with an 8x11-ft. top drift to get at some bad ground indicated by geological surveys. The west-end drift, heavily timbered, was driven 700 ft. without encountering too tough ground, so the contractor dropped back to the west portal and started a full top heading, above spring line, supported by steel sets on wall plates. This top heading has now caught up with the drift, and is being continued until it meets the full-face heading from the east portal, now driven about half the tunnel length.

For full-face driving, Carleton built a 6-wheel 3-deck jumbo riding on 13-ft.-gage gantry tacks, designed to accommodate 13 Ingersoll-Rand X-35 drifters and equipped with an air-lift cherry picker on the rear end. The jumbo is mounted on double wheels at front, single wheels at the rear, with a 20-ft. wheelbase. The rig is a replica of the jumbo used to drive the Whittier tunnels on the Alaska R.R. during the War, except that the top deck was built with a 15-ft. overhang at the back end, making the top platform about 42 ft. long.

Rolling deck added to Jumbo

When bad shale ground was encountered, progress dropped to a slow pace because mucking out had to be delayed while top steel and crown bars were placed. It was then that Carleton got the idea of the cantilever rolling top deck that would permit the jumbo to be shoved against the muck pile and the top working platform extended over the pile to the face. With such working facilities and protection, the mucking and timbering crews could work simultaneously.

The rolling deck is a simple affair. After the original top deck was removed, two longitudinal beams were framed into the top of jumbo structure to serve as rails. Then the deck was rebuilt as a solid platform mounted on wheels. An air hoist at back of platform moves the deck and also serves as a counterweight. The deck rides free on the rails without clamps or hookrollers. It will extend 18 ft.

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beyond the fixed overhang, or 33 ft. forward of the main jumbo structure. No drills are mounted on the deck; it is simply a working platform.

While there is no standard drilling pattern because of the constantly changing ground, most rounds consist of 90 holes, loaded with 30 percent Atlas straight gelatin powder. All holes are drilled from 8 to 8½ ft. to pull a 7-ft. round. In sandstone Jackbits, with 2½-in. starters, are used on the drifters. These are sharpened by grinding at the job shop. In shale a special earth auger with a fish-tail bit and powered by an air drill, has been found most satisfactory to drill out the round. At times it is necessary to use breastboards to hold the face while drilling.

Muck loading is by a Conway 75 mucking machine, with a spare unit standing by for emergencies. The Conway loads into 6-yd. narrow-gauge cars, stepped up to



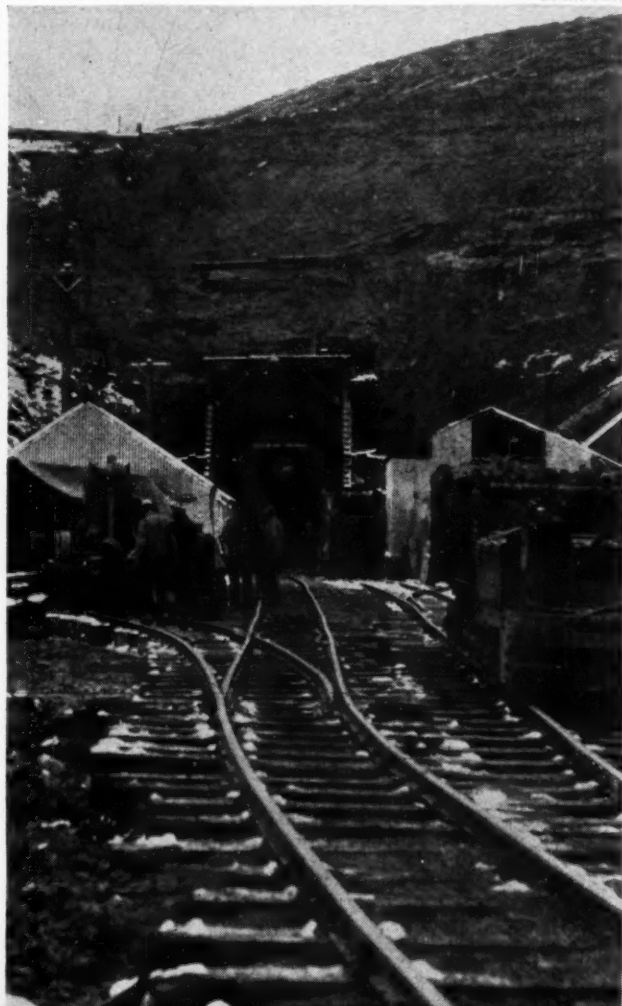
TOUGH GOING all the way. Even where crown bars are not required, tight lagging must be put in roof above springline. Steel sets are made up of two posts and two top segments each.

UPRR Photo

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EAST PORTAL (below) lies in clay overburden that has given some trouble. Recently sidehill pressure kicked in lower ends of wall posts, requiring quick placing of concrete invert to stop ground movement. Ample trackage outside portal permits easy switching of muck trains.

UPRR Photo

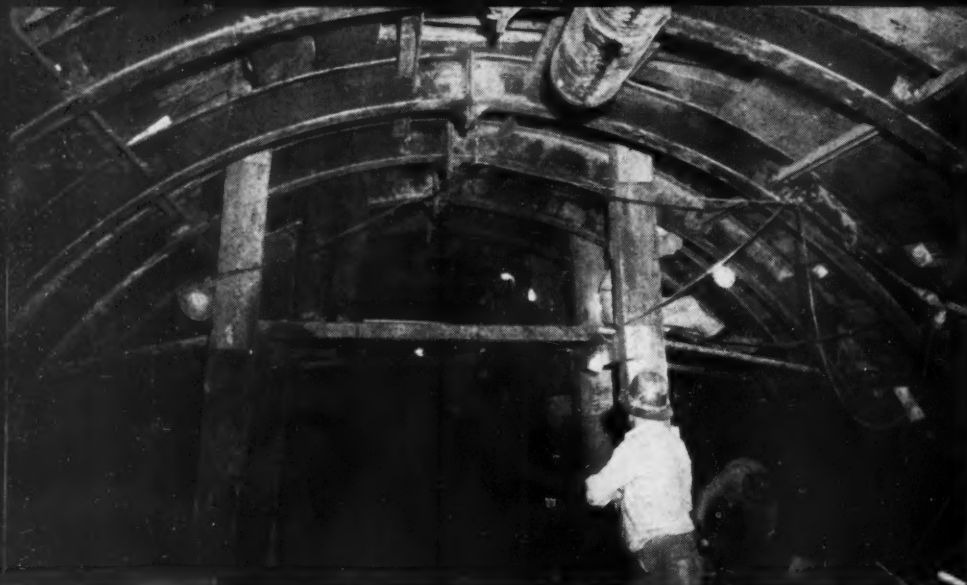


WEST PORTAL (below) is now only top heading following exploratory top center drift. Heading will be continued to meet fullface driving from opposite end, then shovel will take out bench. Steel timbering is carried on steel wall plates.



FISH-TAIL BIT earth auger (below) with 6-in. pitch of screw, proves best in drilling in shale. Augers are driven by air drill.





DRIVING TOP HEADING at west end is messy business, working through drift timbering for first 700 ft. until end of drift is reached. Old posts must remain in place until new top steel is set.

6½-yd. capacity by sideboards. A 7-ft. round loads 50 cars. Cars are switched within the tunnel by the jumbo cherry picker or by a hoist riding on a separate gantry. Storage-battery locomotives haul the loads to the portal, where they are taken over by diesel locomotives

for the half-mile trip to the dump.

Air is supplied by three 850-ft. Chicago-Pneumatic electric drive compressors, with an 810-hp. American Locomotive diesel generator in reserve in case of power failure. A Roots-Connersville 18,000 cfm. positive blower supplies

ventilating air through 26-in. Armco steel vent pipe.

At the west portal, where top heading operations only are under way, air is supplied by portable compressors, and drilling is done from columns and bars. Muck is being dumped into the approach cut. Later it will be loaded out by a shovel, which will continue on into the tunnel excavating the bench.

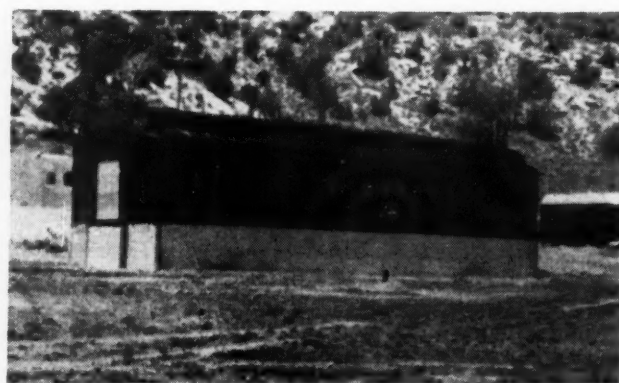
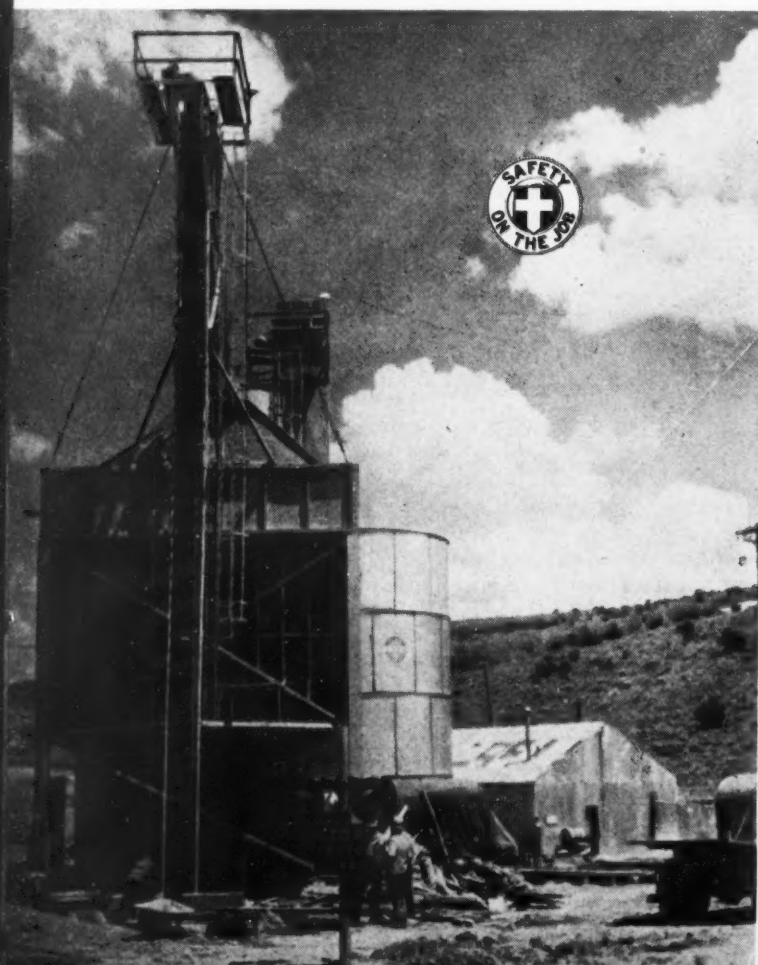
Traveling Concrete Plant

A Noble batching plant has been set up at the east portal in anticipation of concrete lining work. Lining, mixing and placing equipment will all be inside the tunnel in a train consisting of a belt on a ramp on to which batch cars will be dumped for charging a dual-drum 1-yd. mixer, and another belt carrying concrete from the mixer to a dual Pumpcrete machine, all mounted on rail trucks and hooked together as a unit. Bert Noble also designed the steel forms, built by Consolidated Steel Co.

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REGULAR RAILROAD CROSSING flashing lights (below) protect road leading over muck tracks to Noble batching plant. Plant, shown here under construction, will dry-batch aggregates and cement for haul to tunnel in bottom-dump cars.

ISOLATED construction jobs must provide school facilities, so Union Pacific furnished discarded coach (below) for modern version of little red schoolhouse.



EVERY TUNNEL JOB must have an office force, and here is Morrison-Knudsen staff at Aspen: BILL SYFEOT, WEBB WADE, WILMA LOWRY, LOUISE GEMMELL and office manager J. S. MAC MULLAN.



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TO THOSE who have been in Aleutians, this view is reminiscent of Attu or Adak, but actually it is Morrison-Knudsen camp at east portal. Offices, bunk houses, mess hall and shops are Quonset huts and aluminum-clad buildings. Trailer camp in background houses many of the workmen.

Aspen Tunnel is included in the \$250,000,000 post-war improvement program initiated by Union Pacific president G. F. Ashby. It is under the direction of W. C. Perkins, chief engineer, with Lester Ashton resident engineer in charge at the job.

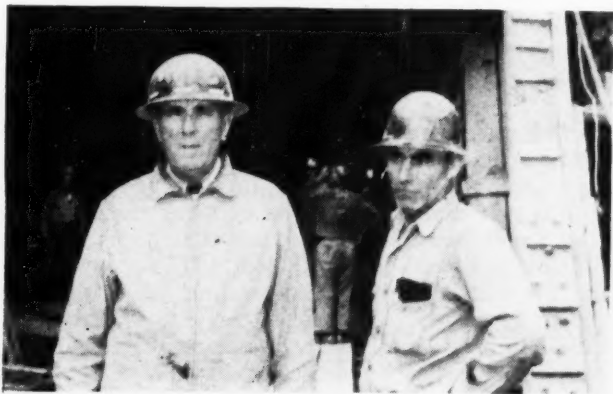
For Morrison-Knudsen Co., Inc.,

Boise, Idaho, Harry Carleton is project manager, and Lowell (Blackie) Thomas is general superintendent. Thomas drove the Whittier Tunnels in Alaska and directed a lot of difficult war-time construction in the Aleutians. J. S. MacMullan is office manager. Other key personnel include Jim Bing-

ham, Frank Dean and Bob Corbett, walking bosses; E. E. (Red) Strausberg, Coleman Knight, Geo. Heaps, Louis Depps and Bill Lane, shift bosses; Ray Hamilton, concrete superintendent; Jack Ourada, camp boss; John Hale, master mechanic and Paul Benner, chief electrician.

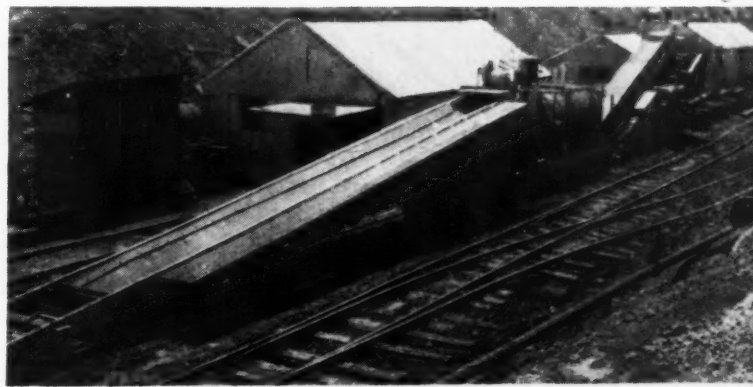
WHEN HE SOLD his West Construction Co. to Morrison-Knudsen, HARRY CARLETON (left) planned on well-earned life of ease, but he soon was called back to active duty to handle tough Aspen job. His chief lieutenant, LOWELL (BLACKIE) THOMAS, is at right.

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MUST BE SERIOUS, whatever BLACKIE THOMAS (left), M-K general superintendent, is discussing with LESTER ASHTON, Union Pacific resident engineer on job.

UPRR Photo



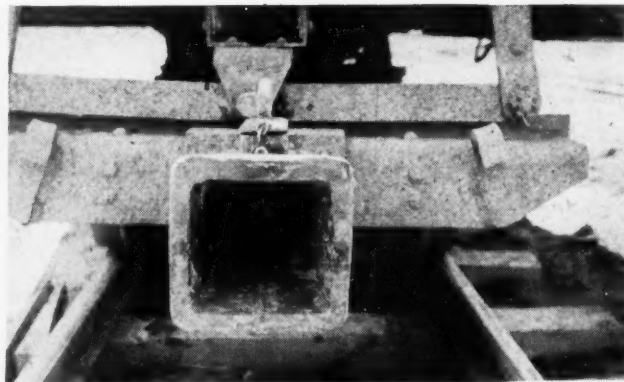
NEAT CONCRETE mixing and placing unit is being assembled at east portal preparatory to concrete lining. Batch cars from batching plant will dump on to ramp belt shown at left in top view for charging dual-drum mixer. From mixer (below) concrete will go by belt to double Pumpcrete machine for pumping into forms. Whole assembly is hooked together in single train.



Automatic Coupler for Tunnel Muck Cars



TONGUE END of tunnel car automatic coupler in use at Aspen Tunnel. Slot in tongue receives coupler pin, push plate bears against flared socket face of other half of coupler.



SOCKET END OF COUPLER is flared to guide tongue into coupling position. Coupling pin raises up, then automatically drops into tongue slot. Chain keeps pin from bouncing out when this end of coupler is running free.

NO SMASHED FINGERS will result from coupling up muck and batch cars at the U.P.R.R. Aspen Tunnel, for Harry Carleton, project manager for Morrison-Knudsen Co., Inc., has devised a clever auto-

matic coupler for these cars. The couplers do away with the old link-and-pin connections and are fully automatic except that cars so equipped are not reversible in the train. They must be kept lined up in the same direction.



COUPLER PIN can be locked in open position by dowel if desired.

The couplers are simple, and can be installed on any type of narrow-gage car. At one end of the car is a pointed tongue pierced with a vertical slot and backed by a vertical push-plate. The other half of the coupler, mounted on the opposite end of the car, consists of a flared socket containing a vertical pin that engages the slot in the tongue. The socket opening is wide enough to engage the tongue as two cars come together, even if the two coupler parts are not exactly in line. As the tongue enters the socket, the pin is automatically pushed up, then drops by gravity into the slot, thus coupling the cars together.

The pin is tied by a short chain that keeps it from bouncing out and becoming lost. To uncouple the cars, the pin is raised by its eyebolt top, either by hand or by a hook. If desired, the coupling pin can be held in raised position by a horizontal dowel pin, thus preventing cars from coupling up.

WHEN LAYING new railroad tracks at Clark Field, near Manila in Philippines, contractors Drake-Utah-Grove were unable to obtain bottom-dump cars for spreading gravel. Super C Tournapull scraper-tractor units were found to be more than a good substitute. They spread ballast in controlled layers without damage to machines or track and do a nice job of compacting ballast in place.



*Cited
for
Service*

OUT OF THE MERGER of two smaller companies, both specializing in waterfront work, has come one of the leading construction firms in the country, the Merritt-Chapman & Scott Corp., New York City. Guiding spirit of this great company from its inception is Capt. Thomas A. Scott, its first president and present chairman of the board. Tom Scott's imagination, energy, determination and business acumen have expanded the original waterfront construction, salvage, and lighterage business into a big general contracting firm now tackling heavy construction of all kinds in this country and abroad.

Capt. Scott was born at New London, Conn., Oct. 10, 1877, son of an intrepid salvage expert and marine constructor. Upon graduating from Mystic Valley Institute in Connecticut, he went to work for his father, Thomas A. Scott, Sr., serving as blacksmith helper, sailor, Captain (from which he gets his present title), salvage officer and manager. On his first construction job, the New London Lodge Lighthouse, he lost a finger, an eternal reminder of the hazards of construction work. In 1903 he organized the T. A. Scott Company, becoming its first president. During the succeeding 14 years he directed activities of this company, specializing in salvage, stevedoring and marine construction from New York to Maine.

Early in 1917 Scott was commissioned Lieutenant Commander in the U.S. Navy, and during the first World War he directed all salvage activities, both naval and

commercial, in American waters, and to a great extent in European waters. He returned from active duty in 1918 as a Commander. For the next two years he was Commissioner, U.S. Shipping Board.

He consummated the merger of T. A. Scott Company with the old Merritt & Chapman Derrick & Wrecking Company in 1922 as the present Merritt-Chapman & Scott Corp. Merritt & Chapman by that time was becoming well recognized as marine pipeline contractors, a line that fitted in well with the Scott Co. activities. The new firm continued the salvage and marine construction business, and branched out into bridge and foundation work. In 1926 it increased its activities into heavy general contracting.

Industrial building, now an important activity of the firm, was started in 1934 with the Union Bag & Paper Co. mill at Savannah. Since then the company has built scores of paper mills, chemical plants and other industrial works throughout the country.

During the recent War Merritt-Chapman & Scott built Drydock No. 5 at the Philadelphia Navy Yard, the Naval Air Station at Quonset Point, R. I., Advance Base

Depot at Davisville, R. I., tank forms in Iceland, air bases in Newfoundland and docks in Ireland, as well as numerous industrial plants and other domestic work. Today, with more than \$70,000,000 in contracts under way, including two big veterans hospitals, the company is more active than ever. The list of projects completed and of those under way is most formidable and would read like a "what's-what-in construction."

Capt. Scott has been active in the development of his company to its present status. He is a great construction man because he believes in construction, because he has the vision and courage to expand both scope and size of operations, and because he has the ability to direct an organization capable of doing the work it does.

Busy as he is, he finds time to devote to outside activities. He is a director of several corporations, and has been president of the New York City Post, Am. Soc. Military Engineers, the Propeller Club of the United States, and the Connecticut Society of Civil Engineers. But above all, Thomas A. Scott is a construction leader and a forceful character in the construction industry.

THOMAS A. SCOTT



ON THE MOVE

Truck and trailer back telescoped pair of derrick legs into position at 24x30-ft. base prepared in advance to await arrival of rig.

Big Drill Derrick Folds Up for Transport

A COLLAPSIBLE DERRICK of unprecedented size is drilling an oil well near Ventura, Calif. The derrick, or "rig" as the operators call it, was built to permit quick moving by motor truck and speedy erection at a new location. Specifications called for a lifting capacity of 300,000 lb., involving over-all mast height of 134 ft. and collapsible features permitting of mounting on a single truck and trailer within the 8x8x65-ft. limitations required for highway travel.

The derrick consists of a pair of telescoping steel legs that are set up on a specially built base. This base is likewise collapsible and

parts and equipment for it are shipped to the site in advance by separate truck. The assembled base is 24x30 ft. in plan and 12 ft. high. When it is ready, the derrick trailer is backed into position so that the bottoms of the two legs can be fastened to supporting sockets while the legs are still in a horizontal position. With the footings anchored, it requires only 12 min. for two 10-hp. motors to swing the telescoped legs up to a vertical position in which they reach a height of 65 ft. Two 5-hp. motors, by worm gear connections, then extend the telescoped portions of the legs to the full 122-ft. length.

This takes only another 12 min.

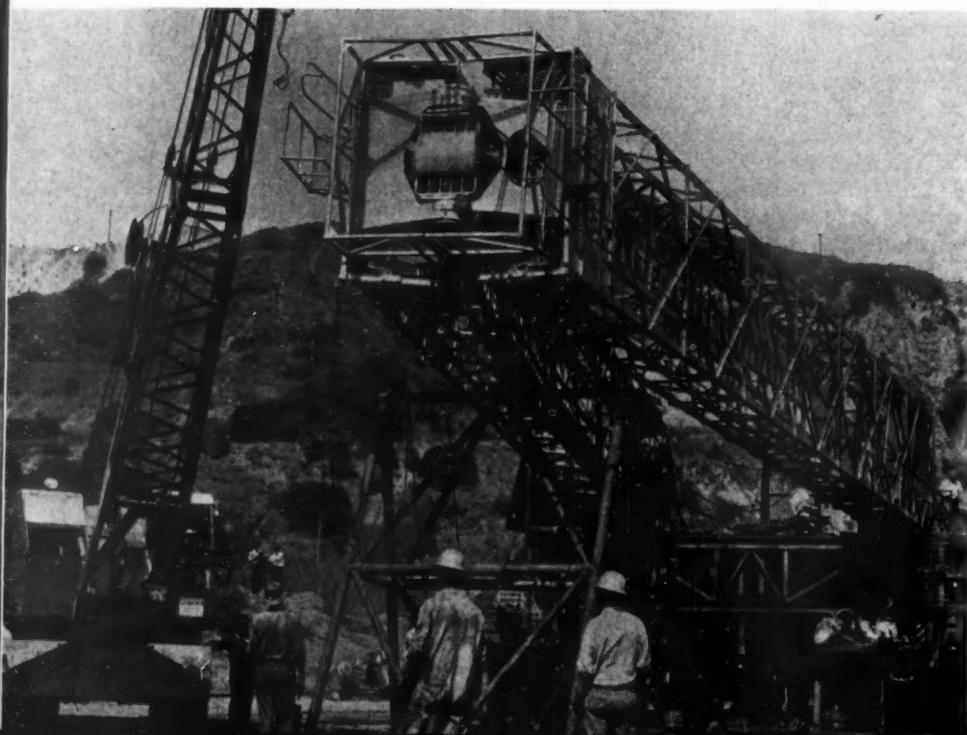
The first rig was made of mild structural steel; subsequent rigs whose construction is now being planned, will be made of square alloy tubing that is to increase the capacity to 450,000 lb. without increasing the rig's size or exceeding state and county specifications for highway travel.

The rig is an all-welded job, has no rivets and uses bolts only at demountable joints. The outfit was built for the Shell Oil Co. by the Waldrip Engineering Co., Hollywood, Calif. Photographs were supplied by the Victor Equipment Co., San Francisco.

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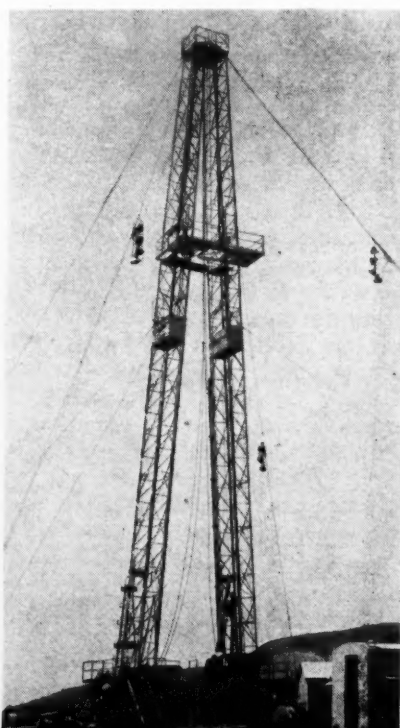
GOING UP

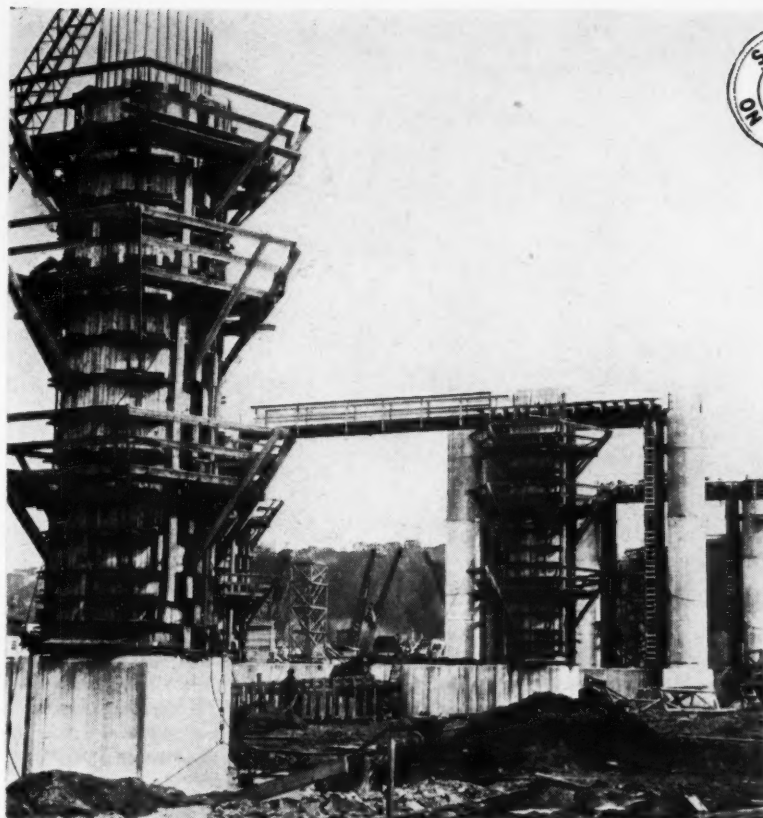
Legs supported in their sockets (below) on opposite sides of base are being swung up toward vertical. Upper sections are still telescoped within lower portions.



READY TO DRILL

Top of completely extended rig (below) is 134 ft. above ground. As shown here rig can lift 150 tons. Later designs for same size rig provide for 225-ton lift.





WIDE-ANGLE HANDRAILS on scaffold, built as parts of wood forms provide protection for workmen on concrete piers for bridge. Portable access stairway can be seen in background.



TOP RAILS extend 2 ft. beyond scaffold planking. Space between rails and floor is covered by 1-in. wire mesh. Workmen at lower levels are thus protected from injury by falling objects.

Safety Scaffolds Built Into Bridge Pier Forms

TO PROVIDE maximum protection for workmen on the construction of twelve 90-ft. concrete piers of a 1,931-ft. bridge across the Monongahela River near Pittsburgh the Dravo Corp. built complete scaffolding embodying safety features integral with the wood forms used for pouring concrete. On these scaffolds handrail posts are installed at 135-deg. angles so that the top rails extend 2 ft. farther out than the scaffold planking. The area between the top rail and the scaffold is covered by 1-in. wire mesh. Workmen at lower levels are thus protected against falling objects and topmost workmen have additional chances to save themselves if they should fall.

Access to the scaffolding is

by well-built tower stairways equipped with handrails. Although it cost more to erect the stairways than ladders, the practice has been adopted by Dravo because it is safer. The increased cost also is justified because stairways enable greater production by facilitating movement of workmen. Tools and small loads can be carried safely on the stairways.

Besides building safety into the job, the contractor provides all workmen with personal protective equipment, as required, including goggles, welding hoods, safety belts, Kapok-filled life jackets, and hard hats. Employees are required to take medical examinations when hired. Each worker is given a copy of the company's field safety

orders, for which he signs a receipt. Regular safety meetings of supervisory personnel are held every three weeks to discuss current problems.

In addition to the installation of fire extinguishers at strategic locations throughout the construction area, a 2-in. water line has been run into the job site and hydrants, with attached hoses, are placed near major buildings. During the early stages of the work, Dravo's safety department in collaboration with the Allegheny County traffic engineer, made a traffic study of the project area. Eight warning signs were placed at appropriate locations to inform motorists about the job, and flagmen are assigned as needed.



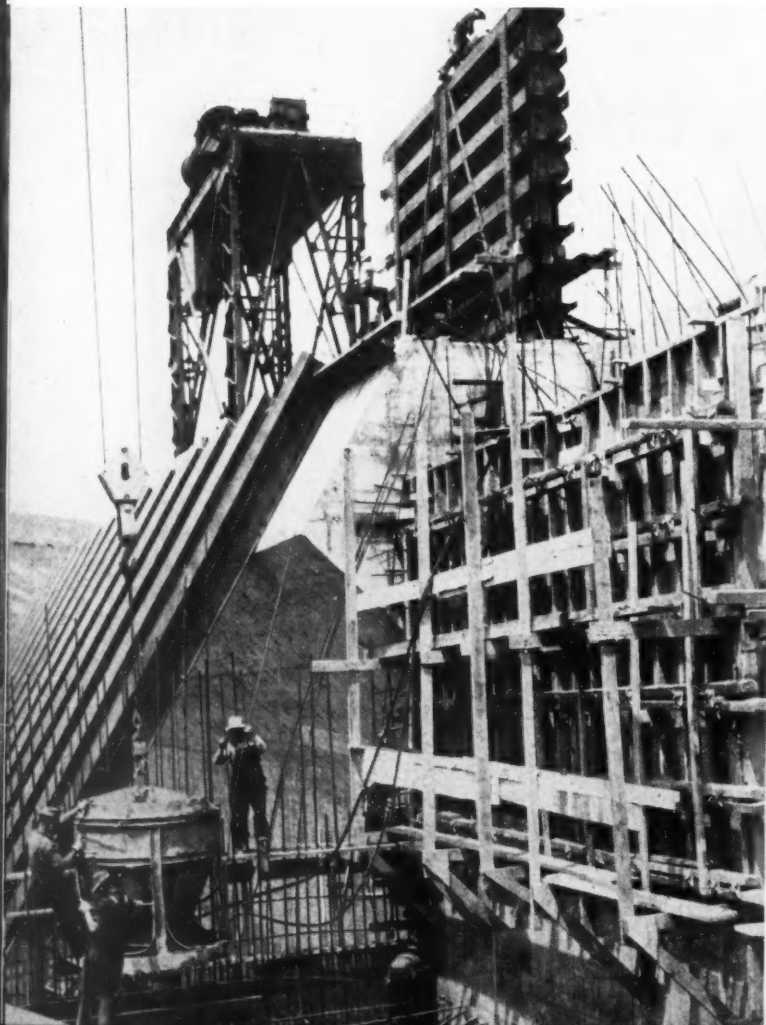
A CLEVER IDEA had a temporary setback at Des Joachims Dam on Ottawa River at Rolphton, Ont., when 170-ft. span of Bailey bridging being built for aggregate and concrete belt conveyors collapsed into stream from atop 120-ft. Bailey bridge towers. Some 9,000 tons of war surplus structures were purchased by Hydro Electric Commission of Ontario for towers and bridging for carrying all aggregate and concrete distribution lines. Concrete will be chuted in drops up to 150 ft. directly from highline belts into forms.

British Combine Photo

BUCKET OF CONCRETE (below), is about to be poured in erection bay of Units 3 and 4 of Lower Salmon Powerhouse near Hagerman, Ida., being constructed by Morrison-Knudsen as part of Idaho Power Co.'s \$50,000,000 expansion program. Beyond is trashrack structure and, above, men working on intake gate. Combined capacity of completed four units will be 15,000 kw., more than twice that of original plant.

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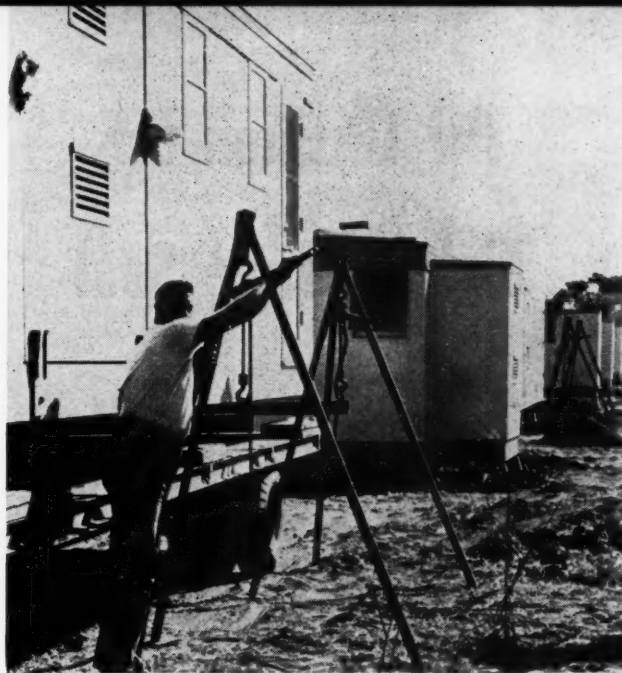
SHAPE OF THINGS TO COME in New York City transportation is indicated by this shot of one of two Manhattan headings of Brooklyn-Battery Tunnel (below). Mason & Hanger Co., contractors on this end, are about through with setting cast-iron lining, placed by shield used only for this purpose inside rock excavation. Concrete lining must be placed, along with floor and roof slabs, ventilation ducts, piping and interior finish, before twin tubes are ready for traffic in 1950. Roadway slab construction has started in foreground.

Wise World Photo





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PORTABLE HOMES for workers constructing dams in Missouri River Basin project are loaded at plant in Litchfield Park, Ariz., by Wing-foot Homes, Inc., subsidiary of Goodyear Tire & Rubber Co. U. S. Bureau of Reclamation is routing homes to nine damsites. Bedrooms of two-bedroom unit are telescoping cubicles that retract into main section of house. Two houses can be shipped on one railroad flatcar or transported on truck and trailer flatbed. When homes have served their purpose they may be removed to new sites. A total of 70 homes of this type has been ordered.



CONSTRUCTION is being rushed day and night by H. K. Ferguson Co. on first peacetime atomic pile being built for Brookhaven National Laboratory at Upton, Long Island, N. Y. The Ferguson Company, which also designed the plant, announces establishment of an Atomic Energy Division, headed by Dr. William I. Thompson to "engage in problems of nuclear science, development engineering and process engineering." It is contract engineering group which will both initiate and construct atomic projects. Wide World Photo

GERMAN WOMEN (below), repair steel mat runway at Tempelhof Airport, Berlin, between frequent plane landings. Steel strip, taking terrific pounding from airlift supply operations, must be maintained under traffic by raising plates and filling in low spots with sand pending completion of new runway.

Wide World Photo



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RADAR TESTING LABORATORY (below), for Army Air Forces at Wright Field, Dayton, Ohio, has arched roof 75 ft. high. Structure with floor area of 15,000 sq.ft. will be warmed by floor-type radiant heating system of 1 1/4 to 6-in. dia. wrought-iron pipe embedded in concrete.

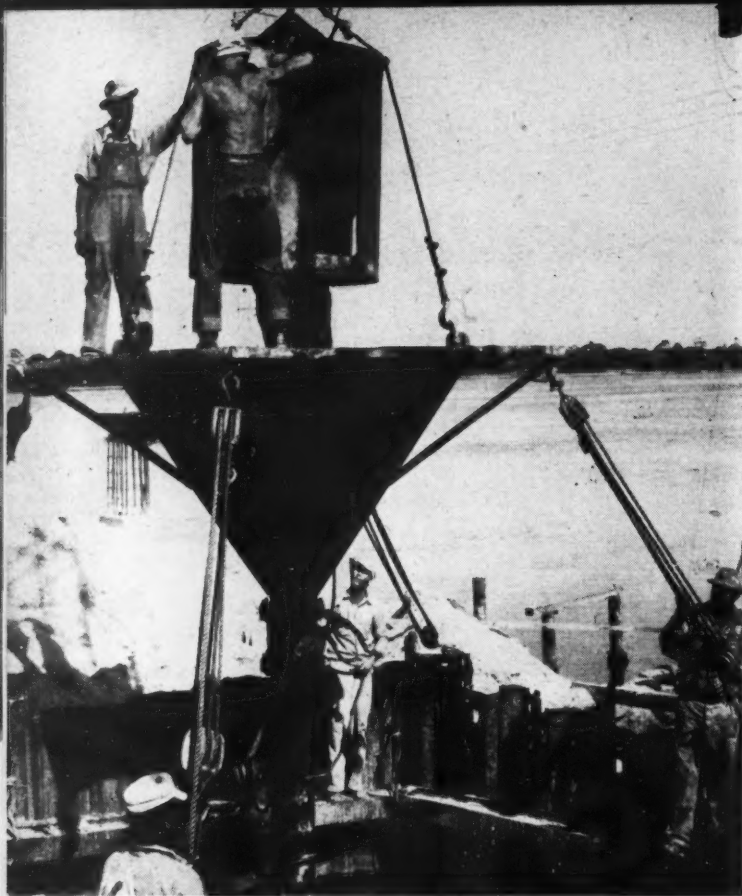


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GRAND OLD LADY, the Queensborough Bridge at New York City (below), gets all dolled up in new coat of paint by crew working on her dizzy heights 400 ft. above East River. Recently, she got some new pins and shoes in her innards (Construction Methods, Feb. '48) so now old lady can settle down for another long stretch of useful service.

Wide World Photo





COMPRESSED AIR, applied to rigid discharge pipe just below rotary valve at bottom of receiving hopper, forms air cushion for tremie concrete on Halifax River Bridge in Florida. Hopper assembly is lifted and held by lines from bucket hook and is steadied by four tackle lines anchored to cofferdam corners.

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PILING IS DRIVEN below water in 78 cofferdams (below) by McKiernan-Terry hammer riding on I-beam spud leads. Note snatch line for steadying hammer.



Air Cushion for Tight Tremie Seal

USUAL TROUBLES in getting a clean and tight contact between the first few batches and the bottom with tremie-placed concrete under water were eliminated on the long multiple-pier Halifax River Bridge at Daytona Beach, Fla. On this job, A. T. Evans, superintendent for Tidewater Construction Corp., Norfolk, Va., developed a clever scheme for placing the first concrete in flooded cofferdams.

The scheme gets away from the usual messy use of cloth excelsior or wood plug to keep the concrete separate from the water in the tremie pipe. The receiving hopper is attached to a rigid tremie pipe. At top of the pipe is a 10-in. rotary valve controlling flow of concrete into the pipe, and just below the valve is a compressed air connection.

With the valve closed, the hopper is filled with concrete, and the assembly is raised until the lower end of the tremie pipe is 4 ft. above bottom or the concrete level. Then compressed air is blown into the pipe below the valve for 20 sec., clearing the pipe of water without scouring the bottom. After the air is shut off, the assembly is lowered so the pipe touches

the bottom. Then the valve is opened, and the air is forced out of the pipe by the concrete, blowing the water ahead of the mix. Thus, the concrete is deposited in an air cushion.

The procedure pays off well here, for there are 78 small sheetpile cofferdams to seal under water. Another speed-up idea is to steady the tremie unit with four sets of block-and-falls anchored to cofferdam corners. The hopper assembly is raised and lowered by slings from the crane hook with the concrete bucket in dumping position. High-early-strength cement in concrete seals (used also for all substructure work) permits unwatering the cofferdams 48 hr. after sealing.

Halifax Bridge, 1,777 ft. long, is made up of 26 I-beam spans 62 ft. long, a central bascule span of 104 ft., and two abutments. Intermediate piers include three cofferdams each, two 12x12 ft. and one 15x15 ft., while the bascule piers are two cofferdams each and the abutments are a single foundation. Wood piling is required in all piers. Each intermediate pier consists of three shafts supporting a concrete cap. I-beam spans are 33-in. WF sections purchased by the Florida State Road Dept. as war surplus. They come in lengths of 20 ft. 8 in., three beams being spliced together by Dardet rivet bolts into 62-ft. lengths. Longitudinal beams carry a 7-in. concrete deck 44 ft. wide with two 6-ft. sidewalks.

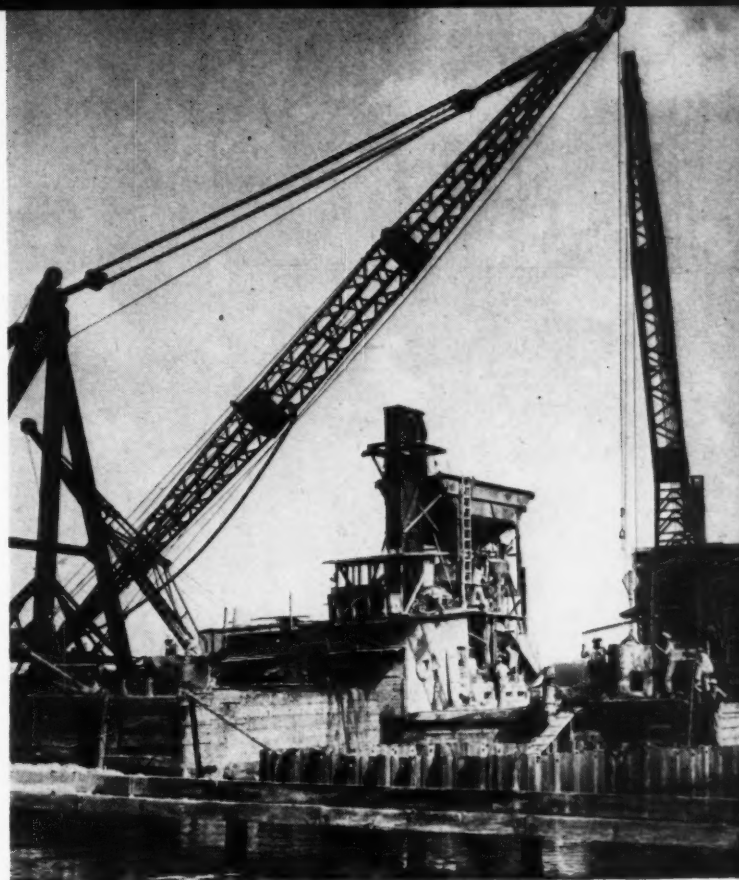
Built With Floating Plant

All operations had to be conducted from one side of the bridge, as a high-tension power line blocked the other side. Considerable dredging was necessary to open up a channel for floating equipment. A total of 1,982 piles was driven from a floating driver equipped with a McKiernan-Terry 9B3 hammer that would drive under water, and a 14-in. H-beam spud for leads. Piles averaged 38 ft. long, and many had to be jetted down.

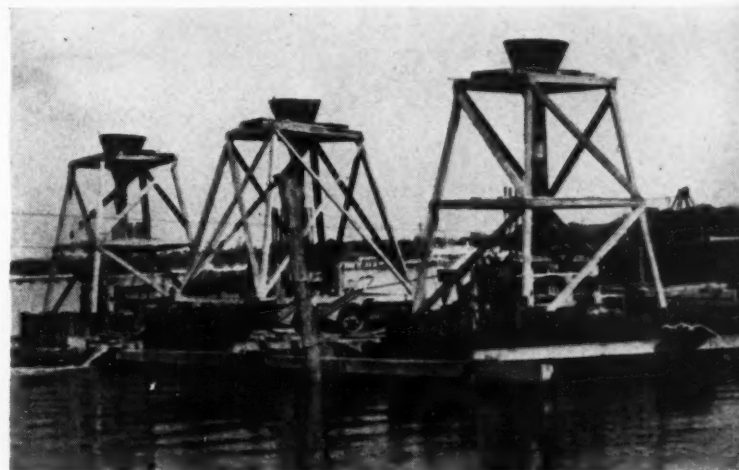
Concrete, supplied by a floating plant, is placed by a barge-mounted crane and bucket. Pier cap forms are carried on four trusses fastened to the pier shafts with Richmond screw anchors embedded in the shaft concrete.

The former old bridge at the site was demolished with a 3,300-lb. drop hammer, and the debris was picked up off the river bottom by clamshell bucket and loaded into barges for disposal in the approaches. Old concrete piling was pulled by a 30-ton floating derrick.

The bridge was designed by E. S. Fraser, former



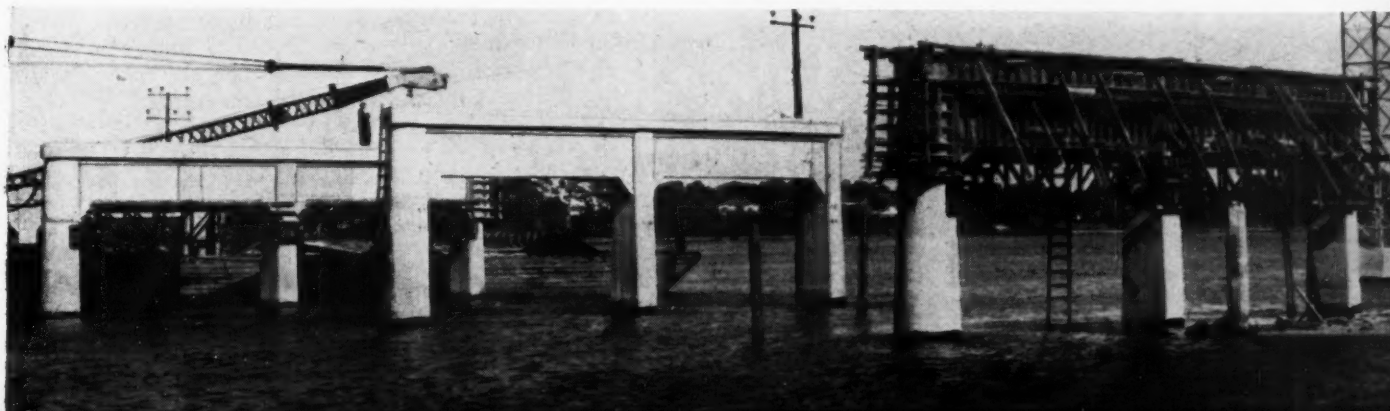
CONCRETE IS MIXED in floating plant charged by floating crane and clamshell. Concrete buckets are handled to tremie hopper by second crane.

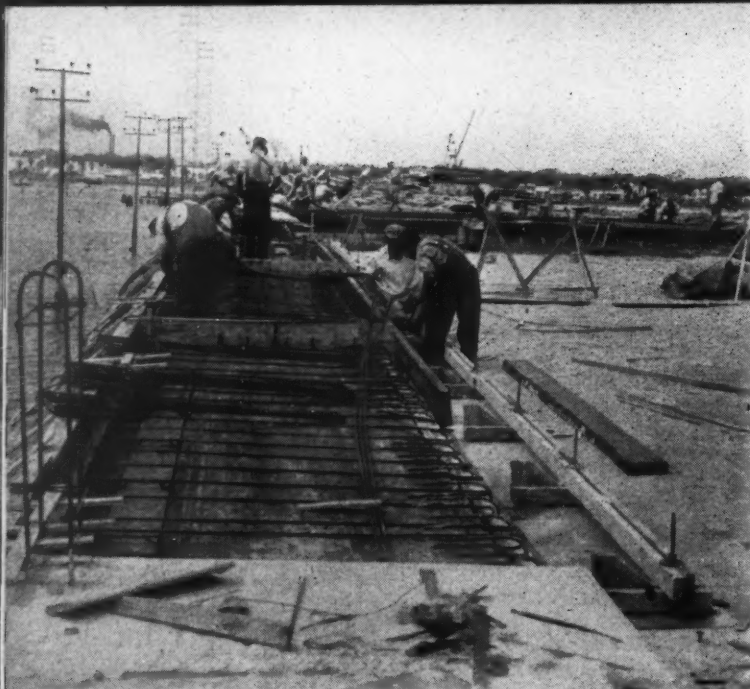


CONCRETE HOPPERS for pouring pier shafts are cradled in frames setting on cofferdams. Cradles are high enough to clear tall shafts on mid-river piers.

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CAP FORMS (below) are carried by four trusses fastened to pier shafts by embedded Richmond screw anchors. Completed intermediate pier is at left.

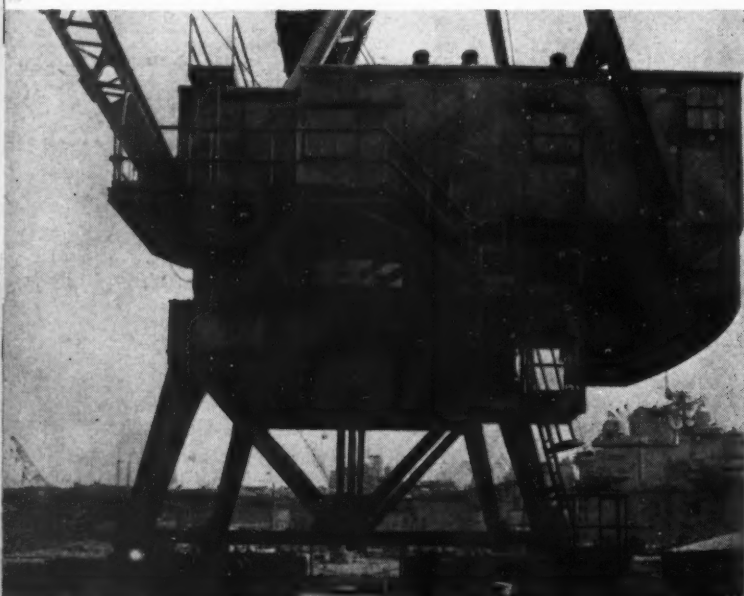




chief bridge engineer for the Florida State Road Dept., succeeded by W. E. Dean. D. M. Roberts is project engineer, assisted by Scott Goldman, job engineer. A. T. Evans is superintendent for Tidewater Construction Corp., Norfolk, Va., general contractors. The bascule span was fabricated by Virginia Bridge Co., Roanoke, Va., with Carnegie-Illinois I-beam lock flooring and Earl Gear Co. operating machinery. Electrical equipment was installed by Mill & Marine Electrical Co., Gastonia, N. C.



ROADWAY CURB FORMS are held by stringers fastened by Universal form clamps embedded in deck slab.



OLD SYSTEM of getting aboard crane made use of access ladders hidden from operator's view. Workmen climbed leg ladder to cage and raised trapdoor, which operated electric warning signal, before continuing upward. When signal failed to work, accidents sometimes resulted.

Foolproof Access Ladders Stop Accidents on Navy Cranes

A SIMPLE IMPROVEMENT has given practically foolproof protection to oilers and other workmen on a type of 25-ton, self-propelled, revolving gantry crane used in Navy yards. Men now can climb up on the machine only with the full knowledge of the operator. Formerly they got aboard by a rear portside ladder, with an electric warning signal as their sole protection.

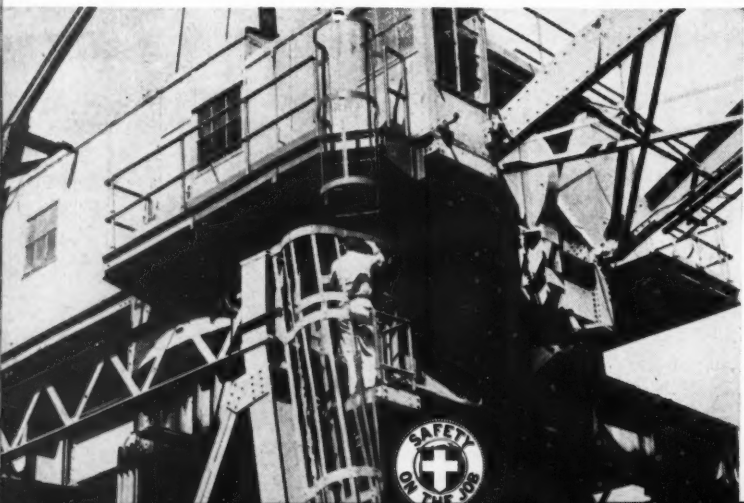
The old electric warning device was good so long as it worked, but salt air eventually fouled the connections and put the signal out of commission. Now oilers mount the cranes at the right front corner and can complete the upward trip only when the operator brings the upper portion of the ladder, on the revolving element of the crane, into line with a platform at the top of the lower section. The ladder is directly under the operator's window.

Even now, it might be possible for a man to grasp the rungs of the upper ladder while the crane was still turning, but a hoop band at head level then would prevent him from being pulled off the platform. To reach the turntable of the crane he must first climb to an upper platform, outside the operator's window.

Since installing the improved, foolproof access arrangement, boarding accidents have been eliminated, the Bureau of Yards and Docks is happy to report. The improvement cost about \$1,500 per crane, including time out of service for the machine.



IMPROVED METHOD requires operator to align upper ladder, outside his window, with lower platform before man can climb above steel band that protects him from being pulled off perch.



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PILES for falsework on Vedder River Bridge are driven in flood-swollen stream racing at 18 mph. Here skid-driver leaves approach span to start across river.



190-FT. TRUSS SPAN was erected by two truck cranes in 10-day shifts for possible emergency evacuation of flood-stricken Fraser valley in British Columbia.

Fast Steel Erection Beats Flood Threat

WHEN FLOODS last June threatened to take out an old wooden bridge across the Vedder River in British Columbia and isolate Vancouver, 60 mi. to the west, a bridge crew of the B. C. Dept. of Public Works met the high water challenge by compressing a normal 6-week erection of a new steel span into a 10-day job. The old bridge became the last link between the city and a temporary terminus of the C. N. and C. P. Railroads when the raging Fraser, into which the Vedder flows, broke through its levees. Furthermore, the old span was the only outlet for a mass evacuation of the valley had the Vedder levees given way.

Because the old bridge was becoming increasingly shaky from

pounding by high waters, the situation became critical. A new bridge alongside the old structure, consisting of a 40-ft. beam span and a 190-ft. truss span was under construction, the abutments and pier were completed, ready for steel.

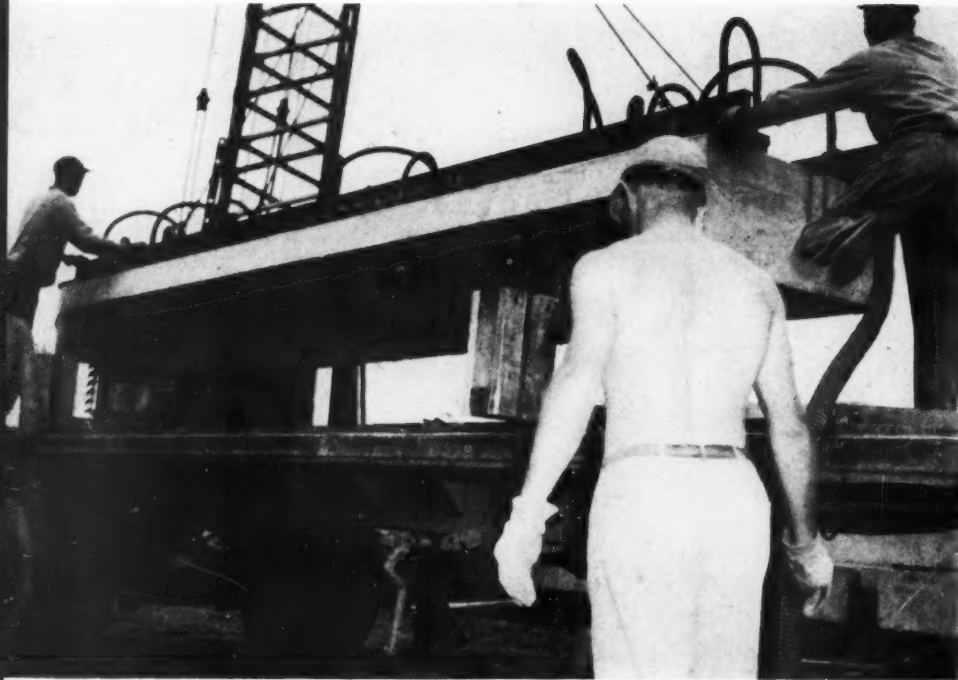
Suddenly changing plans for leisurely erecting the steel from the north end, job superintendent Hugh Bickerton hastily ordered the steel, already fabricated at Vancouver by Western Bridge and Steel Fabricators, Ltd., sent to the south abutment over the only roads still open. Meanwhile, Horie Latimer Construction Co., Ltd., was pulled on to the job with a pile-driver to drive falsework across the flooded stream. Battling an 18-mi.

current, piledriving crews had the falsework finished for the main span in just one week.

Working right behind the driver with two Quickway 15-ton truck cranes, Bickerton erected the trusses in 10 days. Army searchlights were brought in with the idea of working night-shifts also, but shadows and the flood waters made night work too hazardous. Instead, the day crews worked from dawn to dusk.

In anticipation of an emergency evacuation, temporary timber flooring was laid down at first to make the bridge passable. Later the concrete deck was poured, but at all times the bridge was kept ready for traffic. However, the expected emergency never developed.

Porch and Bay Window Units



PRECAST SLAB is loaded on trailer by crane with vacuum lifter for delivery to huge Park Forest housing project near Chicago. Largest casting is 120 sq. ft., weighs 6,700 lb. Force of 35 men in yard average 60 castings per day.

PUTTING IN THE concrete basements and porches of almost 3,200 buildings in an entirely new Chicago suburban community for 30,000 people is a huge task, but Corbetta Construction Co. has devised new methods and improved some old ones to keep such a job on schedule. Chief means of keeping speed up, costs down, is pre-

casting of 7,230 heavy units for porch slabs and bay window supports for 3,010 rental dwelling units.

The new project—Park Forest—is being developed by American Community Builders, Inc., Chicago, for whom Corbetta is doing the concrete work. Buildings are all two story and basement garden-

type structures well scattered on a 2500-acre site 28 mi. south of the Chicago Loop. Building frames are timber, with either wood, brick or stone exteriors. Basements are poured concrete, porch slabs are precast.

The general scheme of using precast units is shown in an accompanying drawing, but originally all concrete was to be poured in place. Bay window and porch foundations were to be walls carried below frost line but not to basement floor level. This meant that after the basement walls were poured, excavation around the building exterior would have to be partially backfilled and thoroughly tamped for a firm base before form erection. After the new pour, the entrance platform would need further backfill before its slab could be poured.

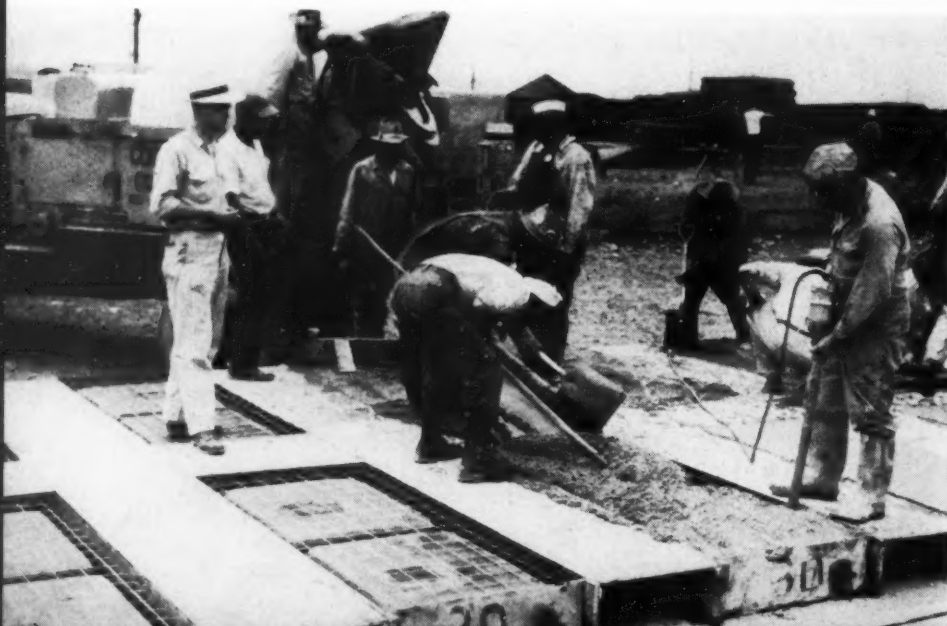
To avoid this slow and difficult process, Corbetta redesigned the work outside the basements for precasting—with a resultant 40 percent saving in labor, and a reduced concrete yardage.

Basement slab and walls are poured first, in a normal manner, with air-entraining concrete hauled by truck. Then foundation posts for the exterior precast units are poured in bored holes. Above grade, the posts are formed in cardboard tubes. On these posts and on concrete bolsters bolted to the basement walls rest the three types of precast units: slabs, bay window support beams and combination cellar window boxes and supports for the bay above. Although there are 7,230 of these major castings in 32 variations weighing a total of 7,500 tons, they are all poured in only 75 sets of forms—a use factor of nearly 100.

Slabs and beams (which resemble a slab placed vertically) are 1½ in. thick with their edges deepened to 20 and 11 in. respectively, and with 7-in. intermediate ribs.



CLEVER FORMS are hinged to casting yard floor and brace each other. Ends are held by blocks on side forms, which are in turn braced by plywood runways to next unit. Central core is polished concrete.



Units Precast on Big Housing Project

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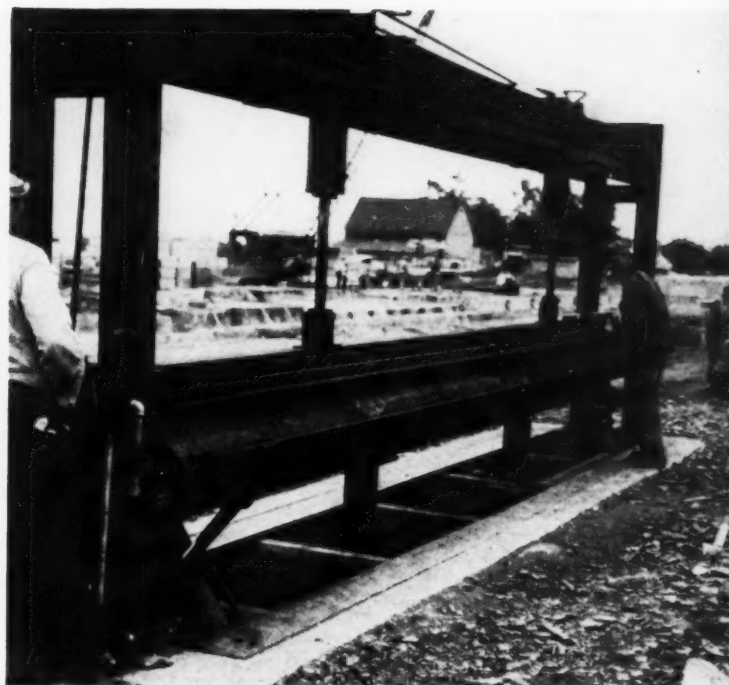
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LARGER UNITS have end forms diagonally wedged to floor, and side panels cross-braced beneath runway. Note half-rounds bolted to inside of lower left panel to form grout keyway that holds adjacent castings together after placement in building.



REINFORCING MESH is bent to shape in job-built hydraulic press. Beam suspended from two upper rams holds mesh sheet as side beam folds it over.

Reinforcing is 4x4-in. No. 10 wire mesh, with a 1/4-in. rod at the bottom of edges and ribs.

Both type units are poured around polished concrete cores or reverse molds. Side forms are Metalwood, a 5/16-in. plywood completely incased in light-gage metal. For easy erection and stripping, these forms are hinged at the bottom to wood sleepers in the concrete floor of the casting yard. They are wedged in place with precut spacer blocks between adjacent forms, or with diagonal braces to timbers projecting above the floor. Thus, no nails are needed and form life is long.

Basement window boxes 33 in. square by 38 in. deep are poured singly or in a unit pair, with steel sash embedded in place. The shell is reinforced with mesh and rods,

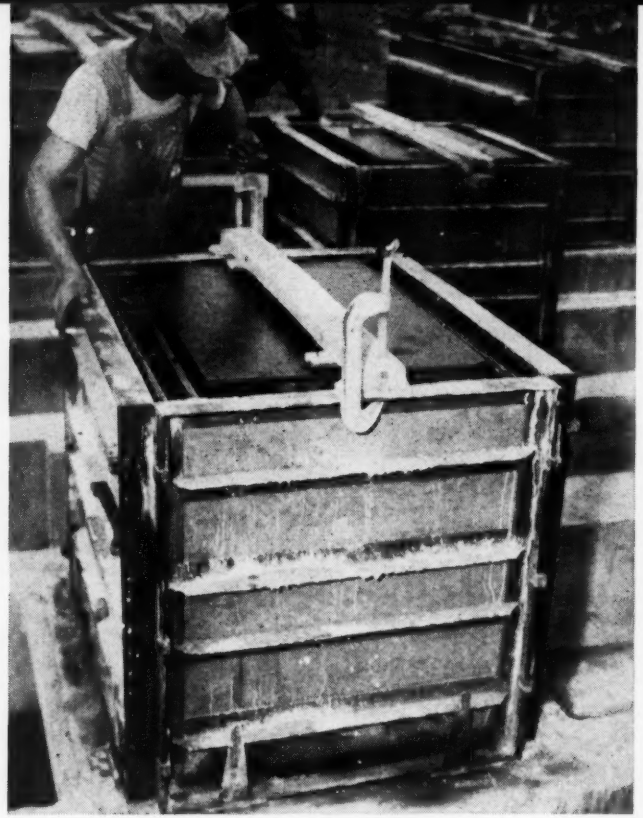
and its inner surface tapers slightly for easier removal from the concrete core around which it is cast. The core is solid, but can move vertically for stripping. It rests on a screw jack embedded in the casting yard floor, and is held in place by low concrete transverse walls and longitudinal beams. Side

forms are Universal steel-braced plywood panels that are hinged at the bottom and clamped to the abutting panels at the corners.

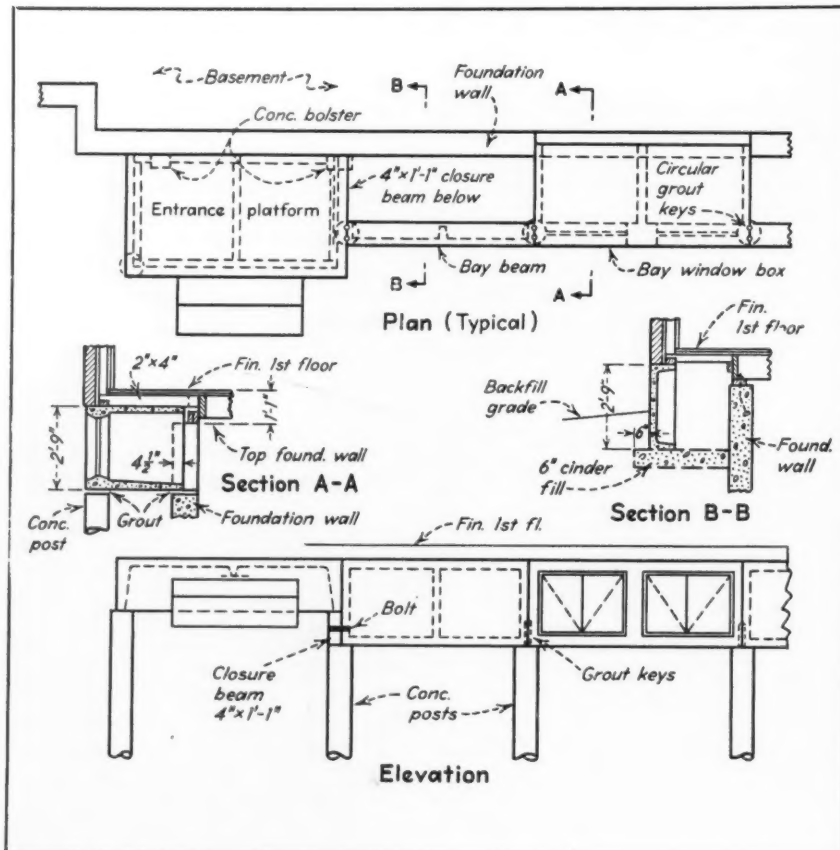
Concrete for all precast units is roughly a 1:1 1/2:2 mix with high-early-strength cement and 4.85 gal. of water per sack. Concrete from a transit-mix truck is chuted to



RESEMBLING ARMY TANK TRAP, concrete cores for cellar window box pours project above casting yard. Boxes have just been removed, and hinged side form panels lie flat.



WINDOW BOX is precast around core that rests on screw jack (left) and that can be lowered to break seal for stripping. Top form will be covered with plywood deflector to direct poured concrete into sides. Side forms are stripped by opening outward on hinged bottom edge.



COMPLICATED POURS outside straight foundation walls at Park Forest are eliminated by precastings. Bay beam and bay window box both support first floor projection of building above.

the forms or dumped by crane-handled bucket. It is vibrated, screeded, floated and troweled, then spray cured and covered with wet burlap.

Castings are removed from the molds 24 hr. after pouring, and at that time the concrete has a 2,500-psi. average compressive strength although it increases to 6,100 psi. in 28 days. After side forms are swung down, slabs and beams are lifted by a vacuum pad and frame handled by crawler crane, with the seal between casting and core broken by blasts of compressed air through pipes in the mold. In stripping the window boxes, side forms are laid flat and the central core lowered slightly on its screw jack to free it from the casting. A crane with special lifting tongs then sets the box to one side where it cures further, along with slabs and beams. After a minimum 7-day cure, the units are loaded on Fruehauf trailers for delivery to the dwelling units where they are set in place by crane.

Concrete Production

Corbetta's concreting operations fall into two distinct classes: truck-hauled air-entraining concrete for cast in place work, and transit-mix



SPECIAL TONGS lift cured window box from storage yard. Casting beyond is double box for two adjacent dwelling units.



PALLETIZED FORM PANELS for basement walls are lowered to cellar slab by Hystaway crane on D7 tractor. After stripping from previous building pour, Universal forms are stacked on pallets that are loaded on sled which tractor-crane tows to new site.

high-early-strength for precasting. Both mixes, shown in an accompanying table, come from the same central plant set-up at a rail siding near the project and adjacent to the casting yard. The plant is really two Butler units set side by side, with common loading facilities but with separate bins and weigh batchers. Each unit handles one type of mix.

Universal Atlas cement for both mixes arrives in bulk, either by rail or truck, and is screw fed to an elevator that spouts it to stor-

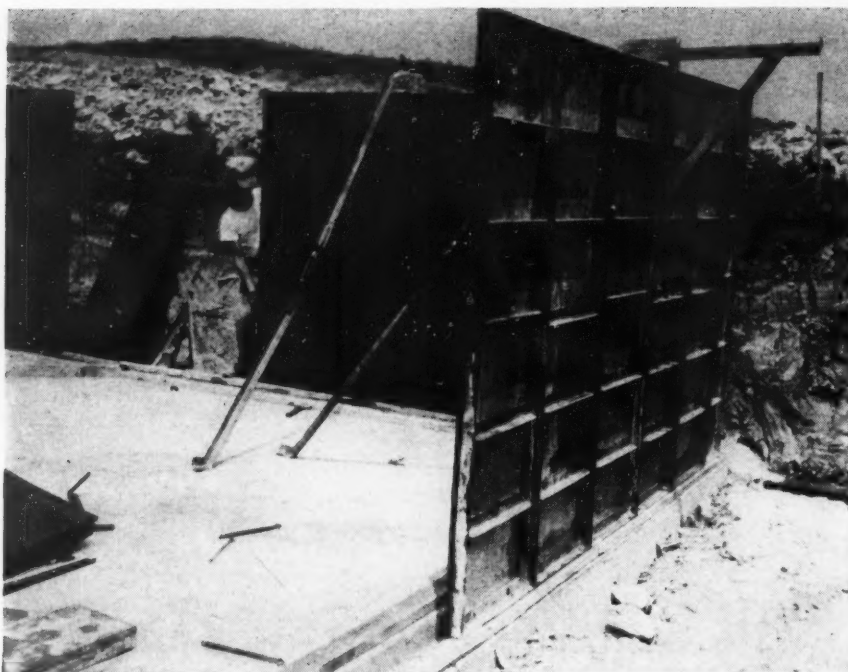
Table 1... Concrete Mix

Batch	FOUNDATIONS	PRECASTING
	1 1/4 yd	2 yd.
Cement	562 lb.	1,504 lb.
Sand	1,870 lb.	2,648 lb.
Gravel	2,330 lb.
Pea Gravel	3,444 lb.
Water	28 gal.	68 gal.
Slump	6 in.	4 1/2 in.
Type	Air	
Cement	entraining	High Early

HIGH QUALITY CONCRETE is result of close control and supervision at every stage from aggregate grading through curing. Mixes are designed for maximum workability and strength.



CENTRAL PLANT delivers air-entraining mix for cast-in-place work and batched materials for transit-mixing of high-early precast concrete. Single 34-E paver shown here produced average 500 yd. per 9-hr. day; has since been supplemented by 27E.



BASEMENT WALL FORMS are braced by angle-iron raker with turnbuckle insert for adjustment. One end of brace is fastened to slab; other end hooks over wall and also acts as scaffold bracket to hold working platform during pour.

age bins. Aggregate is delivered in hopper-bottom cars and belt conveyed to feed the plant bins through a turn-head that is cable-controlled from the unloading station to eliminate a man at the plant

top. A slight downgrade on the siding and an electric capstan for car spotting also conserve manpower in unloading.

For the foundation concrete, materials are weighed out and dumped

through a selector gate and chute into one of two MultiFoote single-drum pavers, with skips removed, set up as stationary mixers below. Concrete is mixed 1 min. One paver—a 34E—discharges through bucket and elevated boom to a truck-loading bin, while the second—a 27E dumps to a tower-hoist skip to feed a second line of trucks.

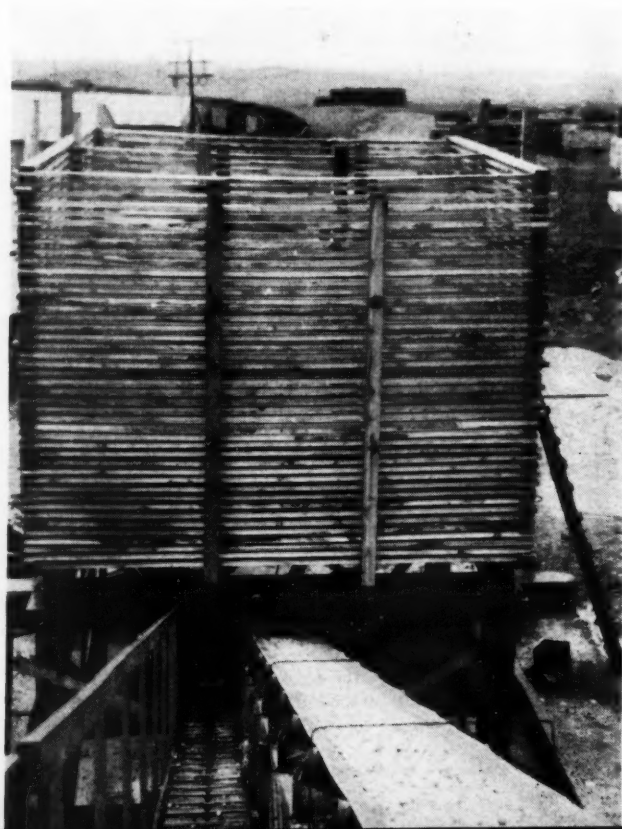
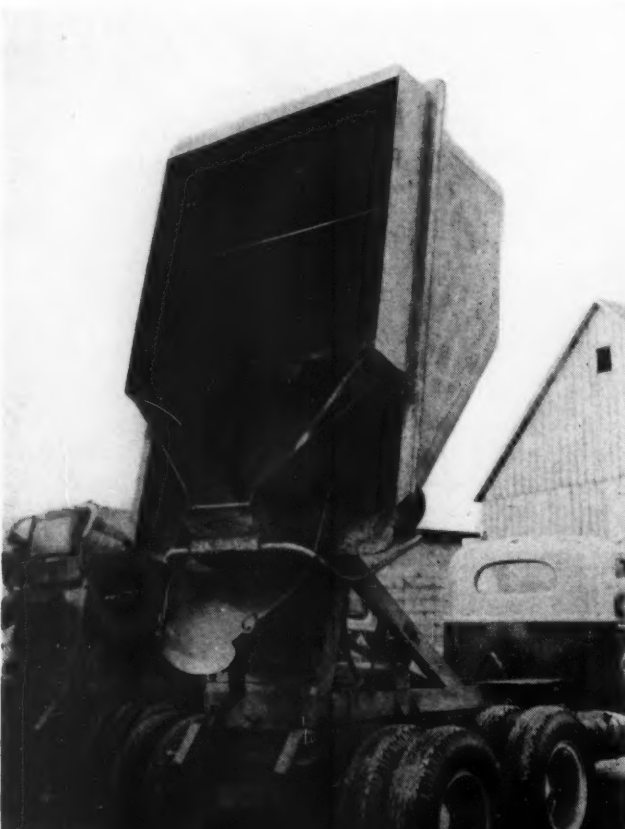
The hauling fleet is seven International trucks with Dumpcrete bodies. To handle the output of both pavers, Corbetta increased the 4-yd. bodies to 5 yd. by welding a $\frac{1}{4}$ x12-in. vertical steel plate around their rims. Concrete is allowed to remain in the trucks only 20 min., but as there is only a short haul between plant and project no difficulty has been encountered.

For the precast units, material is batched into a 2-yd. Smith mixer on a Chevrolet truck and given a 4-min. mix before delivery to the molds.

All concreting operations are well planned. Even with the plant's 27E devoted to producing concrete for a paving subcontractor at Park Forest, 500 cu. yd. of concrete are poured in foundations and 40 to 50 yd. in molds for 60 precastings each day—yet with a total of little more than 300 men.

DUMPCRETE BODIES (below) hauling mix to foundation pours have high welded rim added to increase capacity from 4 to 5 yd. Fleet of seven trucks handles output of two mixers.

UNUSUAL BIN (below) over conveyor to plant will hold extra 115 yd. of pea gravel for precast concrete mix. Bin is made of 2x6's laid flat, with boards on sides and ends alternating and lapped for spiking. Inside will be sheeted with 1-in. planks.



LEGAL ADVENTURES OF TRACTOR CONN

By LESLIE JOBB



By recounting the experiences of Tractor Conn, who symbolizes the average contractor, this series of articles, each based on the decision of an American court and presented in plain, non-legalistic terms, is designed to help construction men avoid costly legal pitfalls.—Editor

The Case of the Constitutional Limitation



Many states, including Washington, have a constitutional limitation providing that the debts of cities and municipalities cannot exceed a certain amount.

In the case of McCarthy vs City of Kelso, reported in 223 Pacific Reporter, 151, the evidence showed that a Washington city had

a water supply and had already reached its constitutional limit of debt. Then the state board of health took a hand, condemned the existing water system and ordered the city to discontinue it. The city discovered that a filtration plant was the only method whereby wholesome water could be obtained.

Having ascertained these facts, the city entered into a contract with Tractor Conn for the new filtration plant, which produced a vigorous protest from certain citizens who would rather drink impure water than pay increased taxes.

"We've already reached our debt limit and the additional debt for this filtration plant is illegal," the protestants alleged.

"The state constitution does not apply to a case like this where the work is done under the order of the state board of health," the city maintained.

"You people had better settle your fight, and then I'll know what to do," Tractor Conn told them.

The parties proceeded to settle the matter in court, and the Washington Supreme Court, in the case referred to, ruled in favor of the City.

The Case of the "Off-Color" Check



At 2 p. m. Tractor Conn pushed a check through the cashier's wicket at the Contract Bank.

"This check says \$123 in figures and 'one two three' in words, but the 'hundred' is omitted," the cashier pointed out.

"We might be in bad if we paid more than \$1.23."

"Tell you what you do. You call your lawyer and if he doesn't say the check is good, I'll pay for his opinion," Conn ventured.

"I'm sport enough to take you on that," the cashier agreed, closed his conversation with the attorney, and counted out \$123 in Uncle Sam's currency.

"He says there's a decision of the Supreme Court of West Virginia in your favor," the cashier explained.

"This defect would not justify the bank in refusing payment of the check, for where there is an ambiguity in the written language in an instrument such as this, the figures will be looked to to determine what was intended," says the West Virginia Supreme Court in the case referred to.

The Case of the California Architects

"Provided, however, that any and all damage occasioned or incurred through any default or breach of duty on the part of the said Tractor Conn shall be audited and certified by three architects, one to be chosen by the said owner, another by the said Tractor Conn, and the



third to be selected by the two so chosen," a California building contract specified. When the building was about half finished, Conn abandoned the contract and the owner claimed damages.

"You can't claim damages till they're audited by the architects, according to the contract," Tractor Conn pointed out.

"No, when you abandoned your contract you lost the benefit of that clause of the contract," the owner declared.

"I'll take my chances on a lawsuit," Tractor Conn persisted and the California courts ruled in his favor in the case of Tally vs Parsons, 131 Cal. 516.

**More Legal Adventures of
Tractor Conn Next Month**



Covering 35-Acre General Motors New Plant at Cleveland Requires . . .

Big Roofing Job Set to Fast Tempo

MANY INDUSTRIAL ROOFING JOBS are so big that progress is measured in "squares" (100 sq. ft.) rather than by square footage. But "acres" would be a more appropriate yardstick for measuring the roof on General Motors' new Chevrolet-Cleveland Parts Manufacturing Division plant in Parma, Ohio, just outside of Cleveland.

By actual measurement, there will be 35.5 acres of roof on the single-story, steel-frame plant—31 acres of which is precast lightweight concrete tile carrying 1½-in. Fesco insulation board, 4 plies of 15-lb. tarred felt and 4 lb. of screened roofing slag per sq. ft. The remaining 4.5 acres of roof, over the so-called "oven" area, is Trus-

con Ferroboard steel deck, 13/16 in. of asphalt coated Fiberglas insulation, 4 plies of felt and 4 lb. of slag.

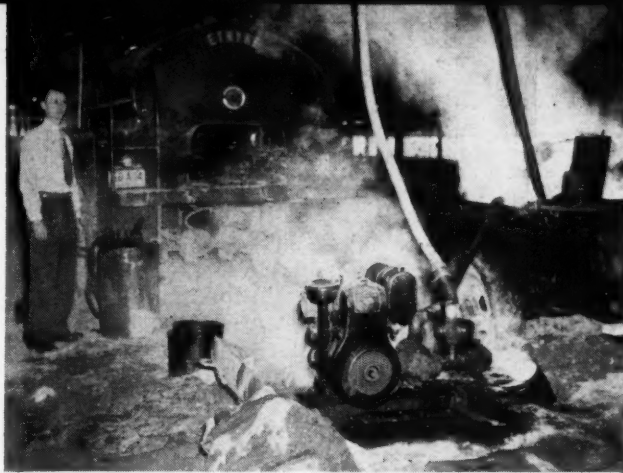
Darin & Armstrong, Detroit, Mich., are the general contractors, with Harold Morrison project manager. Roofing subcontractors are Geo. Rackle & Sons Co., Cleveland, Ohio, who installed the concrete tile and Industrial Roofing & Sheet Metal, Inc., also of Cleveland, who are installing the remainder of the roof including 75 tons of copper flashing and bronze expansion joints.

Bill Hoopes, construction superintendent for Industrial Roofing & Sheet Metal, with Frank Ertel, general foreman, and a 35-man

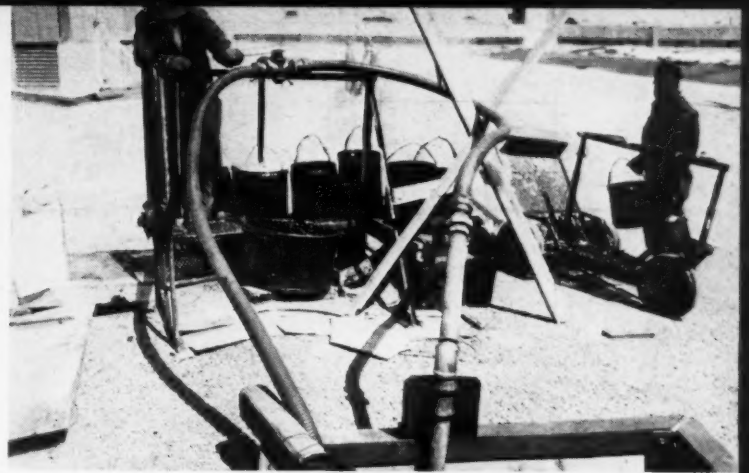
crew are completing about one-third acre of roof (17,000 sq. ft.) per 8-hr. day on the concrete tile. This is how they do it:

Coal tar pitch, heated to 250-300 deg. at the Reilly Tar & Chemical Corp. plant in Cleveland, is delivered to the job in two 2,100-gal. Etnyre tank trucks. Trucks are spotted under any one of several ventilator openings in the roof, beneath which is an ingenious arrangement for re-heating the tar and pumping it to roof level.

From the tank trucks, the tar flows by gravity to a 165-gal. Aeroil Heatmaster kettle where it is heated by oil burner to 400-450 deg. F. The kettle is tapped with a short 2-in. suction line leading to a



1 HOT TAR from nearby asphalt plant is trucked to job in two 2,100-gal. Etnyre tank trucks, fed to 165-gal. Aeroil Heatmaster Kettle for additional heating, and pumped to roof through a 2-in. metal flexible hose by 50-gpm. Roper tar pump.



2 BUCKETS ARE FILLED with hot tar at roof level by three-way valve in 2-in. hose line. Continuous circulating system through ventilator opening to heating kettle and tar pump below insures constant temperature of tar.



3 FOUR 5-gal. tar buckets, each loaded three-quarters full, make a good one-man load for rubber-tired three-wheel cart developed by contractor. Pendulum action of swinging buckets minimizes spillage.



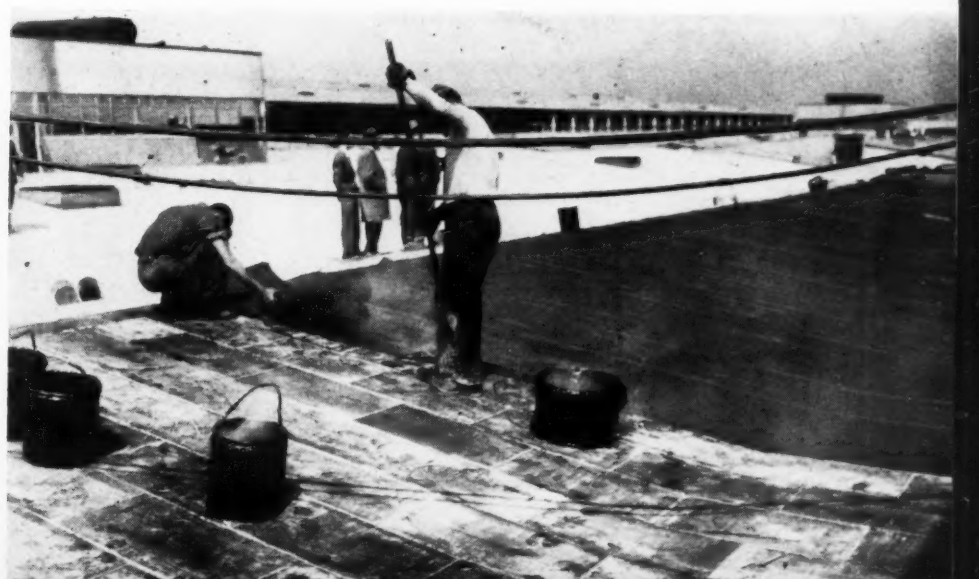
4 FESCO INSULATION BOARD, 30x15x1/2-in., is hand-placed with snug joints, in single mopping of 190-deg. melting-point asphalt applied to concrete roof tile.

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5 AT ROOF RIDGES Fesco insulation board (below) is cut longitudinally and bent down to bear on adjoining roof slope.



6 FIRST OF FOUR PLIES of 15-lb. tarred felt (below) is laid in single mopping of hot tar applied to insulation board. All felt is laid from peak to valley, using force of gravity to unroll rolls of felt.





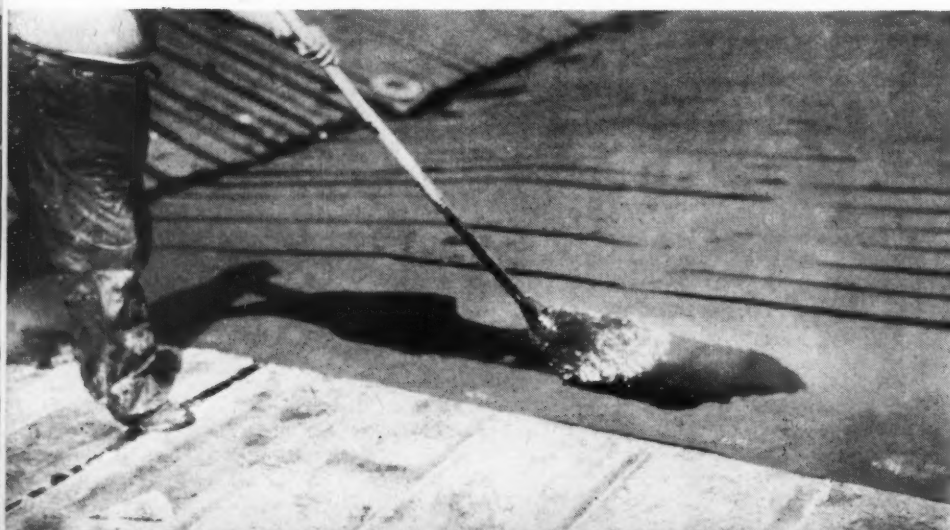
7 LAYERS No. 2, 3, and 4 of tarred felt are laid shingle fashion, each in single mopping of tar, to make roof water repellent.



8 TO COMPLETE JOB, final layer of tarred felt gets single mopping of hot tar followed by 4 lb. of screened roofing slag per sq. ft.

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9 MOPPING OPERATIONS are speeded by lightweight mop developed by contractor, using Fiberglas yarn on an aluminum handle.



50-gpm. Roper tar pump, which pumps the tar to roof level, about 25 ft. above ground level.

The hot tar is kept circulating at all times—from pump, to roof level, to kettle, to pump—through a 2-in. metal flexible hose. A three-way valve in the top of this circulating system—about 3 ft. above roof level—permits an operator to draw off the heated tar at will, for use by the mopping and slagging crews. This circulating system and tar pump not only solved the contractor's problem of getting the tar to the roof, but it also insures even and continuous heating.

Mopping Crews Set Pace

All operations on the roof, which is a series of hips and valleys with slopes 2 on 12, are geared to four mopping crews laying the insulation board and 4-ply felt, and one slagging crew.

The 15x30-in. insulation board and the rolls of tarred felt are lifted from ground to roof with a 1,000-lb. Roll-O-Hoist platform elevator, operating through any conveniently located ventilator opening. Slag is raised to the roof through a second ventilator opening by a motor-powered hoist and a tubular aluminum swinging derrick of the contractor's own design.

Insulation board, felt and slag are wheelbarrowed to the point of installation, while the tar is carried in four 5-gal. tar buckets hung on arms of three-wheel, rubber-tired asphalt carts, developed by the contractor. The pendulum action of this carrying device minimizes spillage and danger of burning the workmen handling the hot material.

Concrete Tile Laid Fast

Concrete tile on the 31-acre area covering the offices and main plant was installed in conventional manner, the tile being clipped to the steel purlins. Insulation board is laid on the concrete tile in a single mopping of 190-deg. melting-point asphalt. This is followed by four plies of tarred felt, applied shingle fashion, with each layer laid in a single mopping of hot tar. A final pouring of tar and the 4-lb. per sq.ft. of slag completes the roof.

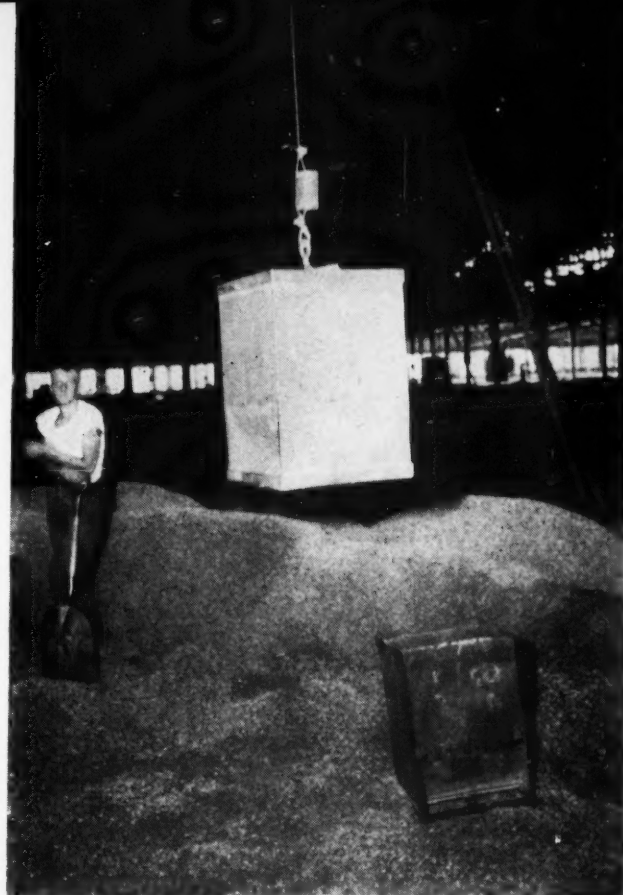
In laying the insulation board, a four-man crew works from peak, to valley, to peak. One man mops, two lay, and the fourth installs the longitudinal line of board over

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10 ROOFING SLAG is trucked to job and stockpiled beneath skylight for hoisting 25 ft. to roof level in 5-cu.ft. bottom-dump buckets.

each ridge. This line of insulation board is centered over the ridge of the roof, cut longitudinally on its top surface and bent down to contact the hot asphalt on the concrete tile, each side of the ridge.

Three two-man crews lay the tarred felt, one man mopping and one laying. The felt is laid from peak to valley, in both directions, with laps made at each ridge and in each valley. This permits a workman to start the roll of felt at the ridge, let it roll by gravity down to the valley and up the next slope a few inches, where it is cut off, the process being repeated starting from the opposite ridge.

A four-man slagging crew applies the slag—one serving, one pouring and two spreading. All mopping is with special job-developed mops of Fiberglas yarn on an aluminum handle.

The same general method of roofing follows on the 4.5 acres of plant covering the "oven" area, except that first, the Truscon Ferro-board steel deck is welded to the purlins of the roof trusses previously erected by the general contractor.

Chas. Missar is sheet metal foreman for the roofing contractor. F.

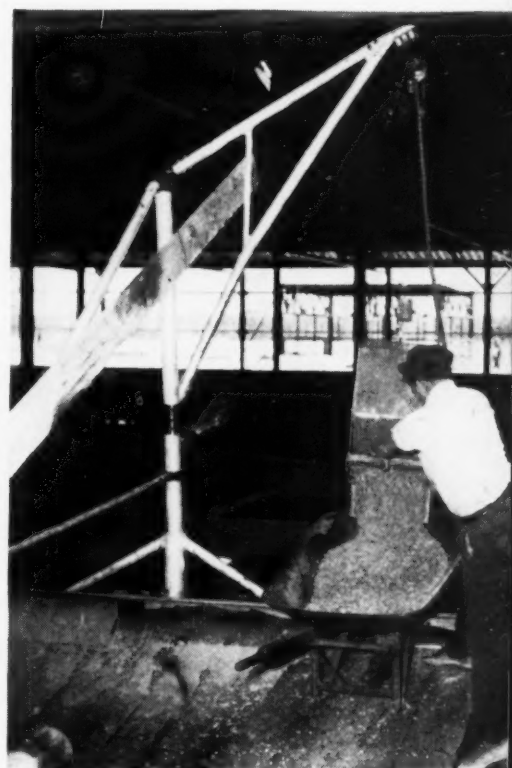
A. Fairbrother & Geo. H. Miehl, Detroit, Mich., are the architects and engineers for the entire project. Perry E. Miller is president of Industrial Roofing and Sheet Metal, Inc.

The Fesco insulation board was manufactured by F. E. Schundler & Co., Joliet, Ill.; the tarred felt by Koppers Co., Pittsburgh, and the Fiberglas insulation by Owens-Corning Fiberglas Corp.



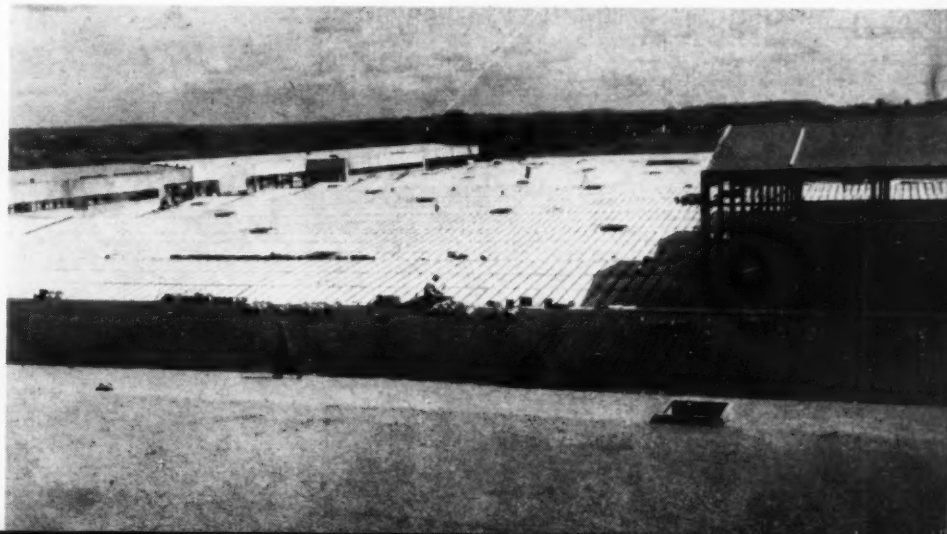
11 SLAG is hoisted to roof by 1,000-lb. gasoline-powered hoist, made by King Manufacturing Co., Chicago. Hoist is ballasted with several rolls of tarred felt.

12 AT ROOF LEVEL, slag buckets are swung around by contractor's tubular aluminum swinging derrick and emptied into wheelbarrows.



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13 THREE STAGES of vast expanse of roofing (below): completed roof with slag topping in foreground; tarred felt is in place in center; and concrete tile has been set in background.



HOW

...they did it



WOOD GRILLE GUARD fastened to boom of ditching machines on Main street storm sewer being built by Russ Mitchell, contractor, at Houston, Tex., covers chains and buckets while in action and prevents injury to persons coming in contact with trencher. Guard also serves as ladder for climbing in and out of ditch.

REPLACING USUAL HOIST on building is this Bay City Mobilcrane, rigged with 100-ft. boom plus 30-ft. jib, hoisting steel for another floor on top of 7-story wing of Bloomingdale's Department Store, New York City. Sherry & Gordon, Inc., New York, is setting steel under supervision of Bill Sherry. When steel reaches top of building, it is erected with gin poles and hand winches.



Mal Gurian Photo

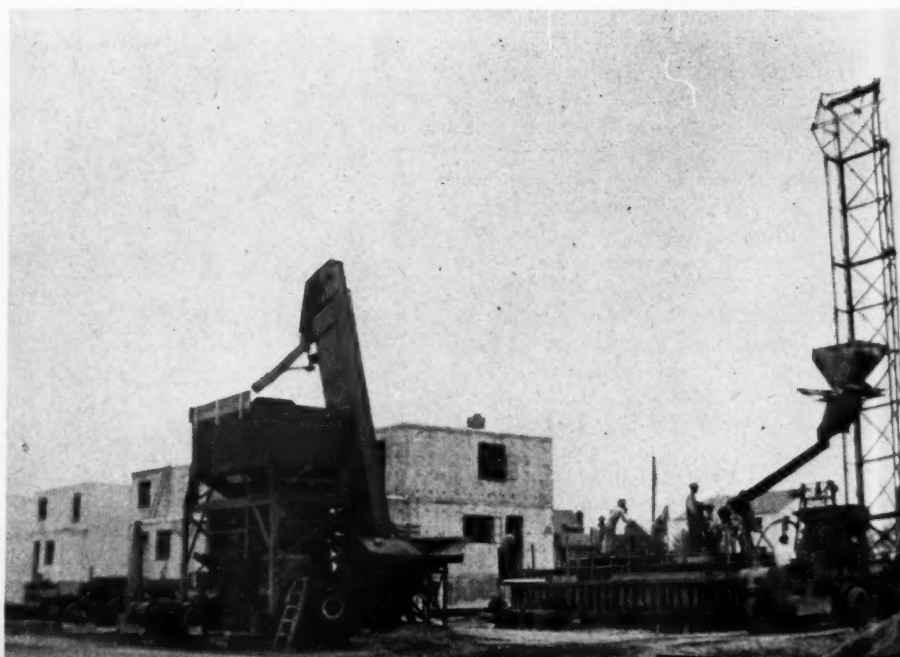


WHEN KANSAS TORNADO whistled through yard of Watkins Inc., Wichita industrial distributors, it ripped bridge crane from night moorings and sailed it down runway. Hook snagged crane rail support, bent it 8 in. out of line, pulled it from footing. To straighten lame leg, Watkins' forces heat it with torch, then force it into place with Templeton, Kenly screw jack.



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September 1948

APARTMENT-HOUSE CONSTRUCTION TECHNIQUES involving power-driven machinery and specially trained labor crews are in use on erection of Drake Homes, new \$2,500,000 private house community, by Jacob Freidus, builder, at Long Beach, N. Y. Special equipment mixes and batches concrete, and Scoopmobile conveys it to Powermobile lift which raises it to top of plywood forms for pouring. Process is repeated with different forms for first and second floors and roof. Builder plans construction of 150 homes on 12-acre site.





CRAWLER TRACTOR equipped with Hyster sideboom relieves construction crew of job of handling 39-ft., 110-lb.-per-yd. rails for new grade for diesel locomotives at C&O Wyoming roundhouse yards near Grand Rapids, Mich. Tractor is Caterpillar diesel D4.



'BRUSHES OF FLAME' cockle old paint, loosen rust and remove surface moisture all in one operation on hydroelectric plant at Reusens, Va., where Miller Contracting Co. of Ohio is using oxyacetylene torch to prepare surface for repainting.

Photo, Air Reduction Sales Co.

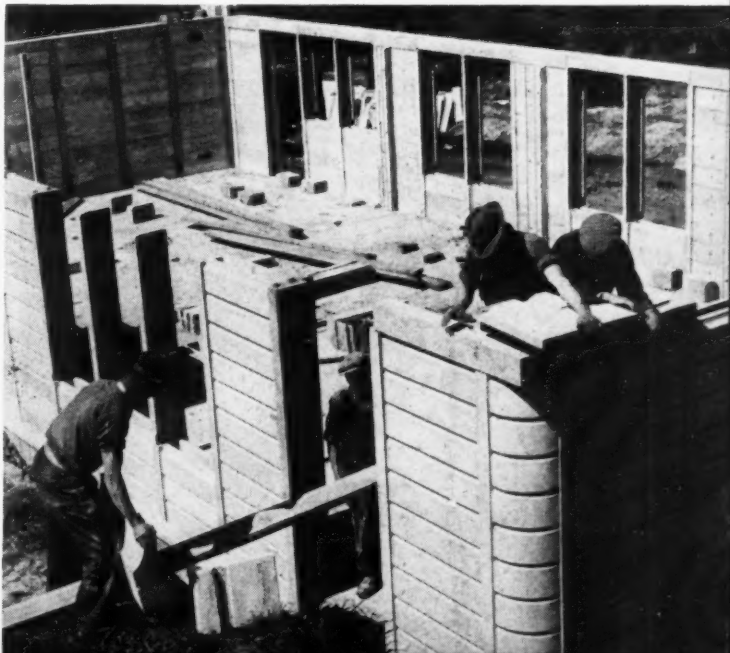


BUILT-TO-ORDER LANDPLANE, measuring 80x17 ft., levels 1,000-acre tract of land for irrigation in Imperial Valley near Niland, Calif. As unit, hauled by International TD-24 crawler tractor, travels

back and forth, blade mounted in middle automatically planes down high spots and fills low spots. Larry Lambert, contractor of Imperial, Calif., owns machine.



← **CHINA CLAY HOUSES** are latest units under construction in England to meet housing shortage among Mid-Cornwall workmen. Clay residue mixed with cement is factory molded into tongued concrete blocks which are fitted into grooved concrete posts erected and wedged securely at intervals on a substantial foundation to form waterproof wall. Outer walls are double with air space between.



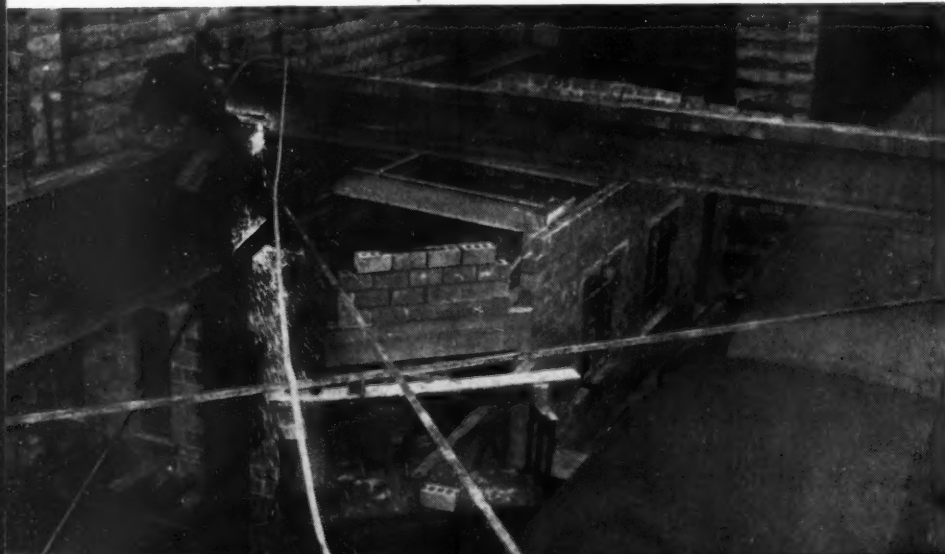


TO STAY out of way of busy train traffic below contractor on demolition of 700-ft. viaduct at Nashville wrecks old bridge largely with equipment working on top. Trick is to stiffen bents as deck is removed to keep whole structure from collapsing.

Old Viaduct Wrecked From Topside



STIFFENING BEAMS are cut loose with gas torch (above) and then arc-welded in alternate spans just outside of roadway curb lines (below) to stiffen old viaduct during dismantling.



PREVENTED FROM OPERATING at ground level by continuous train traffic, the contractor wrecking 49-year-old terminal yards viaduct in Nashville, Tenn., mounted his wrecking equipment on the old timber roadway and proceeded to remove it and the substructure from on top with a substantial assist from a locomotive crane on the tracks below.

To make this method workable, he not only had to schedule his work to keep out of the way of trains operating on the 27 tracks, but also added a system of bracing to keep the rickety old viaduct standing until he could demolish it according to plan.

Removing this 700-ft., 4-lane viaduct, with two sidewalks is a \$30,000 item in a \$535,000 contract of Marion Construction Co., Nashville, for building 702 ft. of new concrete deck on steel bents and concrete pedestals. Malcolm Poteat, partner in the company with A. E. Poteat, his father, and S. H. Bracy, are construction superintendents.

The new viaduct will carry two 24-ft. roadways with 4-ft. flush median strip, two 11-ft. parking lanes and two 9-ft. sidewalks. Its reinforced concrete deck will be surfaced with 1½-in. asphaltic concrete.

The old viaduct, built in 1899 to

replace a two-track overpass and timber approach of Civil War vintage, carried 4-in. floor plank spiked flat to 6x16-in. timber stringers with 8-in. boat spikes. Bents were steel-frame with columns founded on concrete pedestals on rock or spread footings. In recent years five bents at the east end of the old viaduct, just opposite the depot, had been heavily coated with Gunite.

First move of the contractor was to cable the bents from end to end of bridge to help hold it upright until he could remove it. Two $\frac{3}{4}$ -in. cables were stretched over ends of bents and anchored to deadmen set in viaduct approaches. Welding short lengths of $\frac{1}{2}$ -in. reinforcing rod to top flanges, the contractor tied bents to cable with $\frac{3}{4}$ -in. U-clamps around rod and cable.

These cable tiebacks, together with existing tierods between top flanges of steel bents in alternate spans, held the old viaduct steady while stripping sidewalk flooring. At this point, as a safety factor, the contractor welded two lines of T-beams salvaged from the old viaduct, between bents in the unbraced spans. They were spotted just outside the old curb lines.

Bridge Ripped Lengthwise

Chief difficulty in removing the 4-in. timber flooring was pulling the 8-in. boat spikes. To cut the flooring down to size where he could handle it, the contractor ran three saw cuts the complete length of the bridge, or 2,100 ft. of sawing altogether.

One cut was made on center line of roadway and one each under roadway curbs. Using a Lowther portable power saw, with 30-in. blade, sawing averaged 100 ft. per hr. The saw was sharpened each hour but needed resetting only once in the entire 2,100 ft. of sawing.

Flooring was removed in four complete strips from end to end of viaduct, instead of a span at a time, to preserve maximum rigidity. It was removed by two methods, both involving a Lorain Model 41, $\frac{3}{4}$ -yd. crane operating on the old flooring. A small part of the flooring was removed piece by piece, with an ordinary pipe-laying U-shaped steel yoke. With this yoke attached to the load line of the crane, the operator swung the boom around so the floor plank would enter the open end of the yoke. Under strain on the line, the yoke pulled the

plank straight up free of the stringer, then swung it around into a truck behind the crane.

Most of the flooring was ripped up by a special cable arrangement, and loaded by hand into trucks. Two cables were anchored to a bent four spans back of the one in which flooring was being removed. Cables were run under the flooring between stringers, passed around the first floor board to be removed, and carried back to the boom of the $\frac{3}{4}$ -yd. Lorain, spotted just off the span. As the crane walked back it ripped up the flooring.

The five Gunited bents were burned in four places and removed by locomotive crane as they were too heavy for the Lorain to reach out one full span (35 ft.) and pick them up.

The top cross-beam was cut just

outside the two columns which also were burned off just below the cross-beam. The cross-beam was lifted out in three pieces, the heaviest weighing 6 tons. Columns were picked up with their pedestal footings still attached, and all loaded on railroad cars and hauled away for salvage by the Tennessee State Highway Department.

Representing the Tennessee State Highway Department on this federal aid project are: O. F. Goetz, state construction engineer; B. E. Cranch, project engineer; E. M. Bryan, chief inspector; H. D. Long, division construction engineer; and R. J. Love, division engineer. W. T. Brooks is state highway engineer and C. W. Phillips, commissioner. R. E. Nottingham is division engineer for the Nashville Terminal System.

→
OLD DECKING is ripped into four longitudinal sections by three cuts with Lowther 30-in. portable saw, shown here backed up by B. E. CRANCH, project engineer and G. E. HALL, inspector.



EACH OF FIVE Gunited steel bents (below) is cut into five sections and then loaded on to cars by locomotive crane working at track level.



Present and Accounted For...A PAGE OF PERSONALITIES



FIRST PRESIDENT of newly organized Mid-Continent Pipe Line Chapter of Associated General Contractors is THOMAS R. JONES, founder of Oklahoma Contracting Co., Dallas, Tex. Chapter consists of contractors who specialize in construction of cross-country pipe lines for transmission of oil and gas.



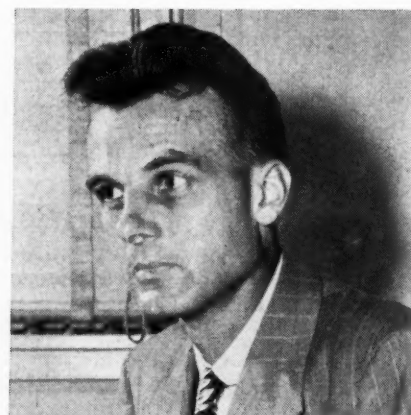
NEW GENERAL SALES MANAGER of The H. K. Ferguson Co., industrial engineers and builders of Cleveland, is HARRY C. WILLIAMS, who gave up consulting engineering partnership to take job.



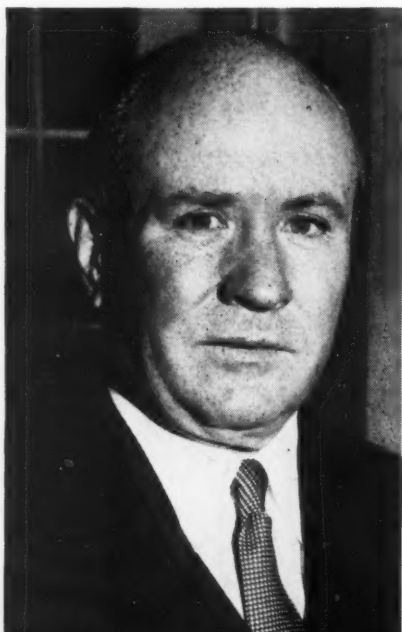
FRANK M. WILLIAMS, recently appointed assistant director and chief engineer of Ohio Department of Highways, has been with department for last 18 years except for 3-year stretch in Army Signal Corps during war, where he held a captaincy.



DIRECTING OPERATIONS by walkie-talkie at first Corps of Engineers underground explosion tests at Dugway Proving Grounds, Utah, is COL. JOSEPH S. GORLINSKI, Sacramento District Engineer in charge of experiments. He is assisted by MAJ. PHILIP H. REGAR (left), in charge of safety and security, and technician SHERWOOD B. SMITH from office of Chief of Engineers.



ENGINEERING-CONSTRUCTION BRANCH of Atomic Energy Commission is now headed by FREDERICK H. WARREN who organized commission's export control program in his former capacity of chief, Production Facilities Control Branch, Engineering Division.



AFTER 27 YEARS with Navy Civil Engineering Corps, CAPT. PAUL J. HALLORAN has joined Foley Bros., Inc., Pleasantville, N. Y., as vice-president. During last war he built extensive shore facilities in this country and commanded assault Seabees in Marianas campaign. Later he headed 6th Naval Construction Brigade in Pacific.

CONSTRUCTION ENGINEER-DIPLOMAT is ROBERT BUTLER, president Walter Butler Co., Inc., of St. Paul, Minn., who became first U.S. Ambassador to Australia in 1946 and is now Ambassador to Cuba. Mr. Butler's foreign construction experience included projects in Java and Dutch East Indies.



How 34 Timken® bearings help MOVE EARTH FASTER!

A 25-TON "bite" in 40 seconds! The new Heiliner* tractor-scraper takes deep bites, loads 16 yards in less than a minute, then carries the load away with positive, effortless action—all on Timken tapered roller bearings. Timken bearings hold moving parts in perfect alignment, insuring a smooth-working power train. They reduce friction, eliminating loss of speed and power. And they reduce wear to a minimum.

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for tapered roller bearings... Timken fine alloy steel. Due to line contact between rolls and races, with positive roll alignment, Timken bearings have tremendous load carrying capacity. Under the toughest loads their true rolling motion and incredibly smooth surface finish enable Timken bearings to operate freely, frictionlessly.

Timken bearings permit the use of closures which effectively retain lubricant, saving both maintenance time and material. They take any combination of radial and thrust

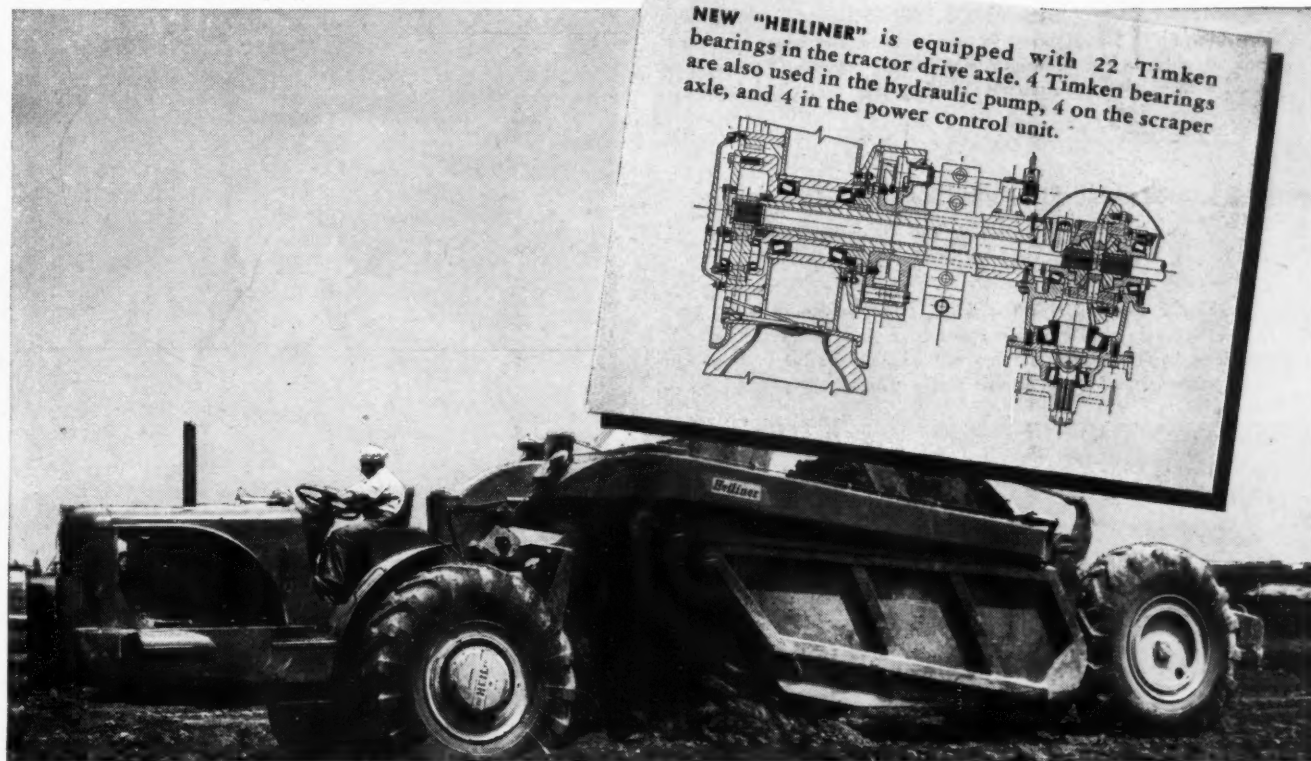
loads. Normally they last the life of the machine.

No other bearing can give your equipment *all* the advantages you get from Timken bearings—backed by 49 years of bearing research and development. Be sure they're used wherever wheels and shafts turn on the machinery you build or buy. And always look for the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

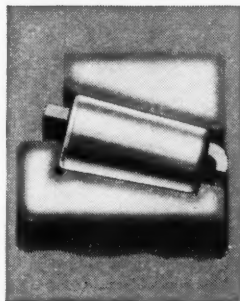


This symbol on a product means its bearings are the best.

*Manufactured by the Heil Company, Milwaukee, Wisconsin



NEW "HEILINER" is equipped with 22 Timken bearings in the tractor drive axle. 4 Timken bearings are also used in the hydraulic pump, 4 on the scraper axle, and 4 in the power control unit.

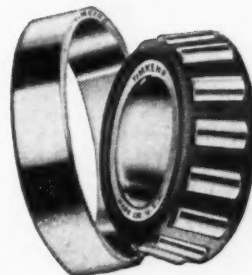


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Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

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**TAPERED
ROLLER BEARINGS**



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION



SIX-ROOM HOUSE RIDES ACROSS BRIDGE over Canisteo River, New York, on its 5-mi. journey to new location, making way for clearance of old site for federal Almond Dam project. Structure was raised 8 ft. to clear bridge rails.

Wide World Photo

Page 98 — **CONSTRUCTION METHODS** — September 1948

SHADES OF PAUL BUNYAN! Old Logger's idea of using paver to mix flapjack batter for his crews is copied by Park Ridge, Ill., American Legion chef in turning out pancake batter in small concrete mixer to feed crowd at community festival.

Wide World Photo



LOD


oddities



SNOW-SHED built last October (above) for access to outlet tunnel of Hendeck No. 2 powerhouse in Swiss Alps served its purpose, for it was nearly buried in snow three months later (below). Locher and Zublin, joint contractors from Zurich, are building job.



Here's more proof that masons prefer ATLAS MORTAR CEMENT



BARTEN & WOOD INC.
Masonry Construction
 UNITED BUILDING • 43 LEON STREET • BOSTON 15, MASS
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Universal Atlas Cement Co.
 1027 Statler Office Building
 Boston 16, Massachusetts

Dear Sirs:

On this group of trucking terminals, together with four other buildings not shown in the picture, we laid up over half a million brick with Atlas Mortar.

We were mighty pleased with the results, and it was literally money in the pocket the way the masonry work progressed.

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It gave us what we consider an ideal set, and particularly appealed to us by its speed during cold weather months.

We're convinced that for top notch low cost masonry work, the best bet on the job is Atlas Mortar.

Sincerely,
Andrew Barten
 Andrew Barten

Numerous contractors, like Mr. Barten, praise the yield, strength and color of Atlas Mortar Cement. Masons like its rich, buttery plasticity . . . the way it responds quickly and easily to the trowel.

Backed by years of research, Atlas Mortar Cement

complies with ASTM and Federal specifications for masonry cement. For further information, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

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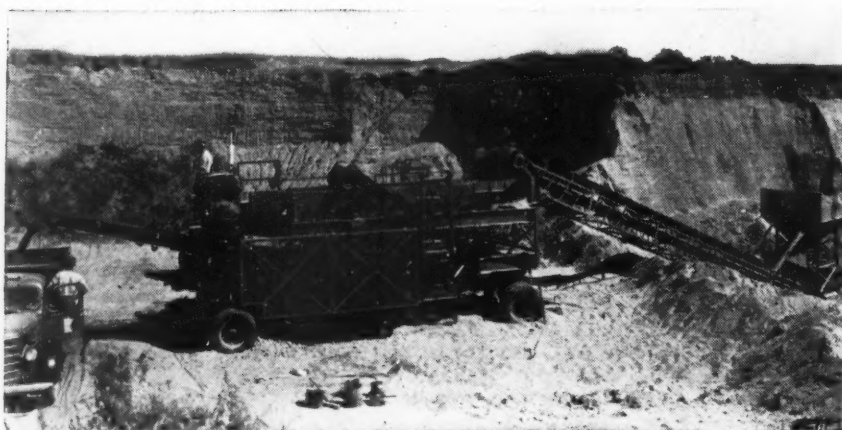
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"THE THEATRE GUILD ON THE AIR" — Sponsored by U. S. Steel Subsidiaries — Sunday Evenings — ABC Network

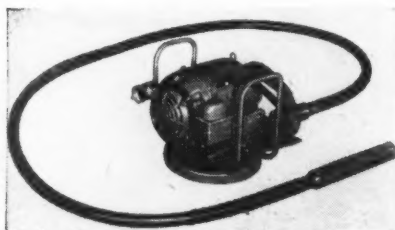
CONSTRUCTION EQUIPMENT NEWS

SEPTEMBER 1948 REVIEW of Construction Machinery and Materials

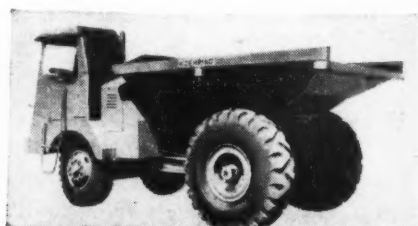


PORTABLE SCREENING AND LOADING PLANT—Designed to handle either gravel or rock from pit, quarry or stockpile when a crusher is not needed, this portable screening and loading plant will produce finished aggregate sizes, travel over any road, and can be re-erected quickly. Plant consists of a heavy-

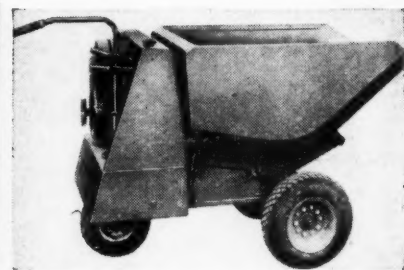
duty, double-deck, horizontal vibrating screen, three folding-type channel frame conveyors and an apron feeder with charging hopper and grizzly, all mounted on a pneumatic-tired transport truck. With clutch and power take-off shaft, 40-50 hp. is required.—**Iowa Manufacturing Co., Cedar Rapids, Iowa.**



ELECTRIC POWERED CONCRETE VIBRATORS—Totally inclosed splash-proof electric motors, watertight control stations and cable connectors, adjustable ball-bearing countershafts, and 360-deg. swivel mountings are features of two concrete vibrators. Shafts from motors to vibrating heads come in sections that can be extended to 35 ft. Flat coils reinforce each end. Model HE has a full-load speed of 6,000 vibrations per min. and a 2½-in. head. Model JE6 has a speed of 7,600 vibrations per min. at full load and a 1½-in. head.—**Stow Manufacturing Co., Binghamton, N. Y.**



HAULING UNIT—Heaped load capacity of 12 cu.yd. and rugged construction are combined in the diesel-powered Rocktor, a heavy-duty off-road rock hauling unit. The 150-hp. engine develops 5 forward traction speeds up to 30.1 mph. and 2 reverse speeds. Other features include controlled high-speed dumping and twin lever steering gear with hydraulic booster. The 10-ft. wide dump body, rocker mounted, is boosted to 70-deg. dump position by double-acting twin hydraulic cylinders.—**Koehring Co., 3026 W. Concordia Ave., Milwaukee 10, Wis.**



POWER WHEELBARROW—The Moto-Bug has a rated capacity of 10 cu.ft. or 1,000 lb. and is powered through V-belt drive and fully inclosed gears by an air-cooled 3.9-hp. gasoline engine. With forward and reverse speeds of 2-4 mph., wheelbarrow features an instantaneous gravity dump body and chain stop, an easy steering device, 33-in. maximum width, a front-axle differential and rubber-tired wheels.—**Kwik-Mix Co., Port Washington, Wis.**



TANDEM AXLE DUMP TRAILER—With a payload up to 50 percent greater than single axle trailers, a tandem axle dump trailer is relatively light despite its size. Payload distribution is 34 percent on king pin and 66 percent on tandem axle unit. Inside body length is 20 ft. and sides and front are 60 in. high. Twin cylinder hoists provide a 45-deg. dumping angle.—**McCabe Powers Auto Body Co., St. Louis 15, Mo.**

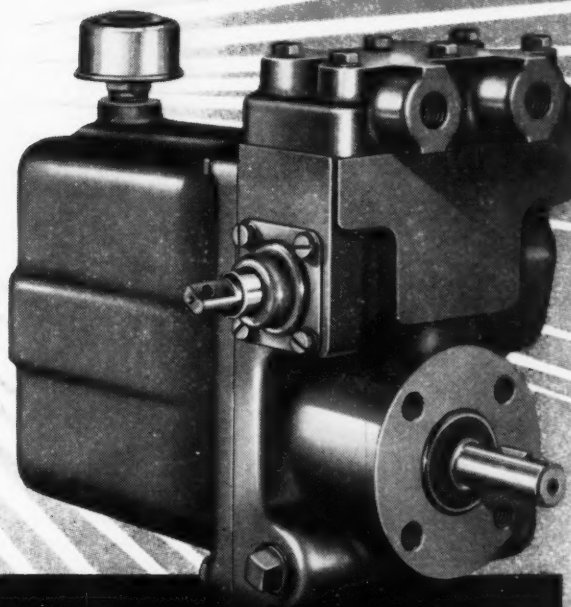


LARGE CAPACITY PULVERIZER—Limited only by the operator's capacity to feed stone fast enough, a large capacity pulverizer produces 170 or more tons of ag-lime per hr., 90-100 percent passing 8 mesh screen. Feed opening 22x50 in. permits passage of large rocks for primary crushing, and the 32x48-in. machine requires 320 hp. to produce above capacities.—**Lippmann Engineering Works, Milwaukee, Wis.**

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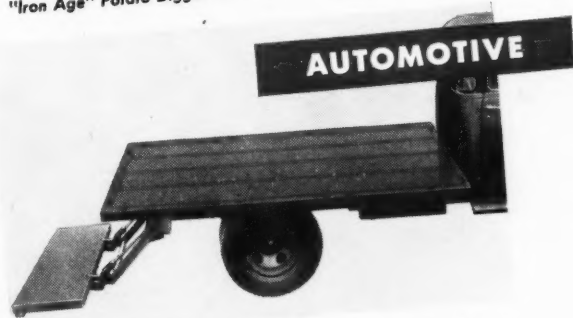
MANY USES



VICKERS POWER PACK



"Iron Age" Potato Digger of A. B. Farquhar Co., York, Pa.



"Hydraul-Lift" Tail Gate of Cemco Industries, Inc., Galion, O.

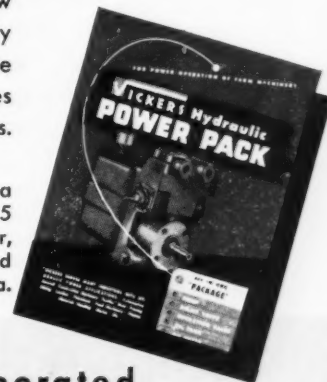


"Profit Mover" of Construction Products Corp., Lynwood, Calif.

The Vickers Hydraulic Power Pack is a compact, self-contained hydraulic system which meets a wide variety of control needs in mobile equipment. It provides the machinery equipment manufacturer with a quick, easy, low cost installation which assures his customers of long trouble free service.

Tractors, planters, cultivators, plows, stackers, loaders, harvesters, rakes, mowers, etc., are among the many agricultural uses for the Vickers Hydraulic Power Pack. On commercial vehicles, it saves time and labor by actuating dump hoists, lifting tail gates and other miscellaneous operations. In the construction industry, light duty scrapers and bulldozers, fork lift trucks, loaders, scoops, snow plows, tractors, etc., are conveniently and economically controlled by the Vickers Hydraulic Power Pack. It saves labor, speeds operation, cuts costs.

The Vickers Hydraulic Power Pack is a compact package weighing only 55 pounds. It incorporates an oil tank, filter, vane pump, overload relief valve and operating valve. Write for Bulletin 46-48a.



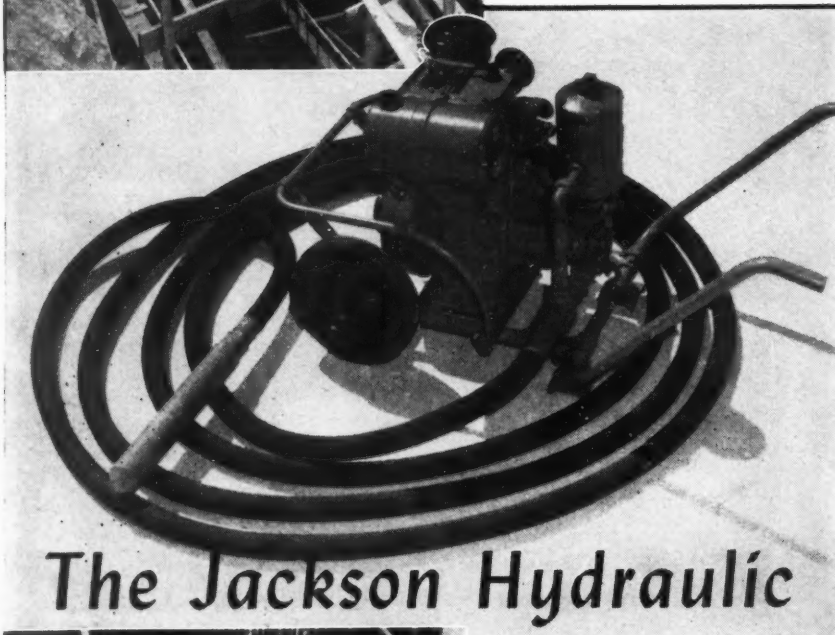
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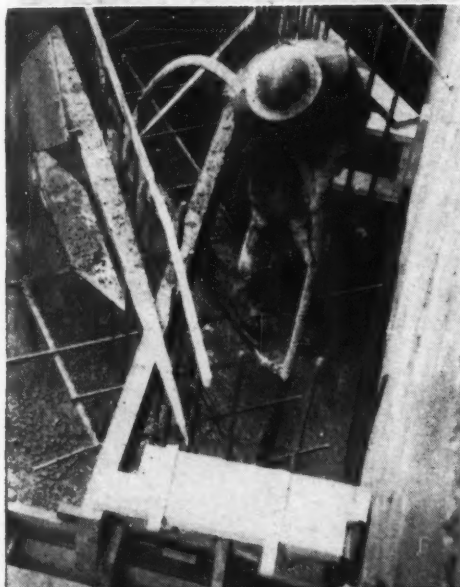
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THE CONCRETE VIBRATOR WITH THE 50 FT. REACH

**A WHALE OF A
TIME-SAVER
ON THOSE HARD-
TO-GET-AT JOBS,
AND GENERAL
CONSTRUCTION, TOO!**



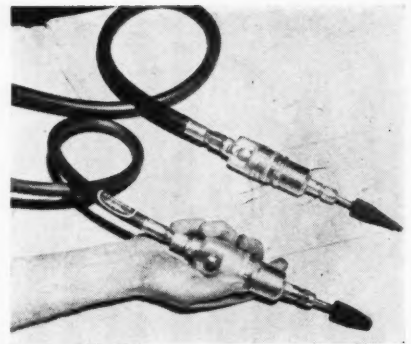
The Jackson Hydraulic



The 50' hose length with which this vibrator is available makes frequent changes of location unnecessary, keeps the machine working, greatly reduces non-productive time. Interchangeable fittings permit reversing the hose whenever wear makes it desirable.

The Jackson Hydraulic has no troublesome parts to break, and since all parts run in oil, no lubrication problem. It's powered by a husky Wisconsin engine and frequency is instantly adjustable from 4,000 to 7,000 VPM. Let us send you the complete facts on this finest of all vibrators for general construction purposes.

ELECTRIC TAMPER & EQUIPMENT COMPANY • Ludington, Mich.



AIR HOSE FOR SMALL TOOLS— Weighs less than half as much as, and is stronger than, ordinary hose. Flexible as a lamp cord because of light weight. In 1/4-in. size hose weighs only 8.8 lb. per 100 ft. Oil-proof inside and out. Designed for working pressures up to 250 psi. Cover will not tear or snag easily.—**B. F. Goodrich Co., Akron, Ohio**

ALUMINUM TILE—Made in individual 4 1/4-in. squares, light and durable, Altico tile can be applied to ceilings and walls with mastic cement. Made in 16 popular colors. Foundation sheets are unnecessary. Tile is laid merely by pressing it into the mastic waterproofing cement. Tile may be cut or trimmed with ordinary household scissors.—**Alloy Tile Corp., Newark, N. J.**

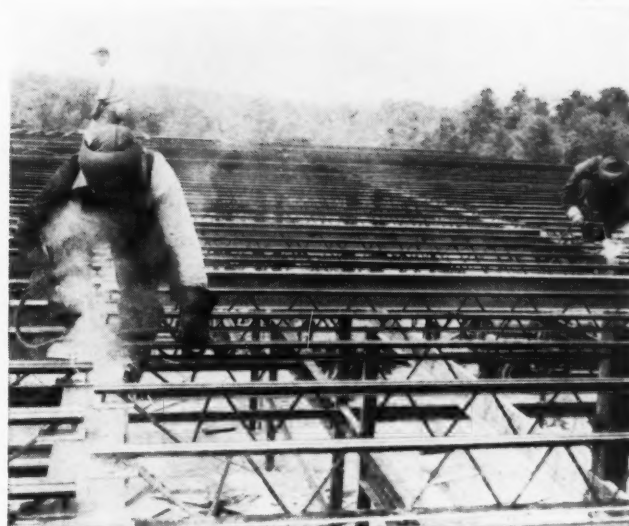


PORTABLE ELECTRIC DRILL— Lightweight construction and power are combined in the Model 500 1/2-in. drill. Weighing 9 lb., drill includes a balanced armature, handles and housing of aluminum alloy, a.c.-d.c. motor, a blower-type fan and removable side handles for close-quarter drilling. Drill is supplied with a 3-wire, rubber-covered cable and attachment plug.—**Portable Electric Tools, Inc., 255-59 West 79th St., Chicago 20, Ill.**

Simplifies Erection of School with Arc Welding



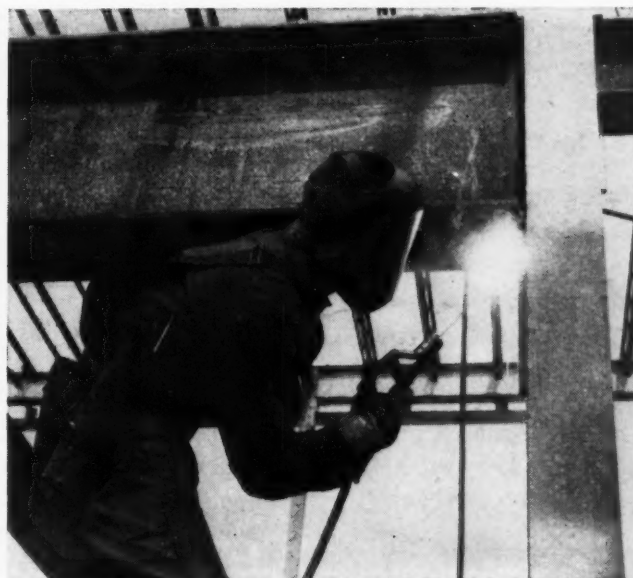
19-ROOM JR. HIGH for South Euclid-Lyndhurst, Ohio, schools. Eventually to comprise 25 rooms plus gym. Architects: C. B. Rowley & Assoc.; Structural Engineer: Frank Eroskey & Assoc.; General Contractors: Leo W. Schmidt Co.; Structural Work: Builders Structural Steel Co. (all of Cleveland).



BAR JOISTS of roof are welded to beams with 2" fillet welds on each side. First and second floor are reinforced concrete. Final building to be 400 ft. long with 200 ft. wings. Present part is 210 ft. x 63 ft. plus heating plant.



BEAM-TO-COLUMN connections bolted, plumbed, then arc welded. Total steel in present building 160 tons with columns of 5" to 8"; beams and girders up to 30". Welded with $\frac{5}{32}$ " and $\frac{3}{16}$ " "Fleetweld 5" electrode and portable Lincoln Welders.

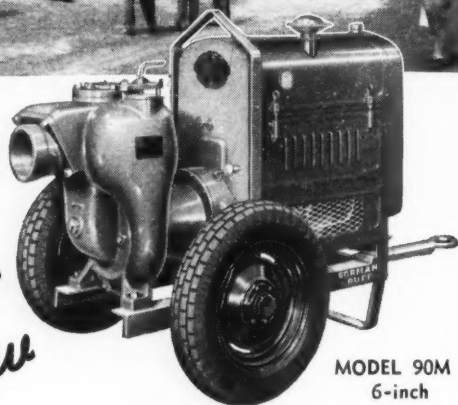


WELDED IN 8 DAYS. Two welders completed the welding of the framework in 5 days after members were erected, and welded the joists to the beams in 3 days. The builder reports that arc welding greatly simplified the erection procedure and resulted in an extremely rigid structure.

The above is published by LINCOLN ELECTRIC in the interests of progress. Architects and engineers are invited to write on their letterhead to be placed on mailing list for Structural Welding Studies. The Lincoln Electric Company, Dept. 125, Cleveland 1, Ohio. **Advertisement.**



GORMAN-RUPP
"Steals" the Pump Show



MODEL 90M
6-inch

----- AT THE ROAD SHOW !

Contractors and distributors alike were amazed at the outstanding performance of Gorman-Rupp pumps at the Road Show. Here they saw the highest priming, fastest priming and pumping demonstration on the grounds.

Mr. Contractor!

You cannot afford to start a new job without the new **GORMAN-RUPP** pump to keep the hole dry and costs down.

There is a Gorman-Rupp distributor in your territory. He will be glad to demonstrate to you the outstanding all around performance of the new Gorman-Rupp pump . . . still the most dependable pump. He will gladly provide you with our new catalog, Form 8CP-11 that tells in detail about these new pumps.

All Sizes: - 7M - 10M
 15M - 20M - 30M - 40M
 90M - 125M

If you do not know the Gorman-Rupp distributor in your territory, write to us. We will provide full information.

THE GORMAN-RUPP COMPANY
 PUMPS
 MANSFIELD, OHIO



TWINBATCH PAVER—Small, maneuverable paver for economical and efficient service on intermediate paving jobs, the 16-E paver moves from job to job on pneumatic tires at speeds up to 8¼ mph. without damaging hard-surface roads. Maximum operating capacity is 48 to 50 cu. yd. per hr., based on 60-sec. specification. Features are dual wheels on discharge end and single wheels on charge end, a two-compartment drum with overlapping action and automatic controls, an oscillating boom with 180 deg. angular working range, Batchmeter controlled auto-cycle mixing, an automatic timing device for locking a batch in the drum and a syphon-type water tank for better control of water-cement ratio.—Koehring Co., 3206 W. Concordia Ave., Milwaukee 10, Wis.

STEEL CONSTRUCTION

TERRY Steel Contractors Incorporated

**BUILDINGS BRIDGES
TOWERS TANKS**

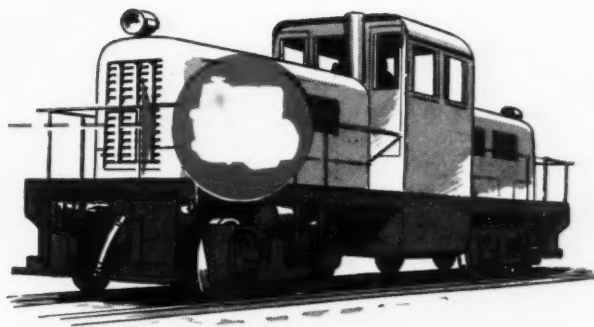
**STEEL FABRICATORS
ERECTORS**

*your inquiries will warrant
our prompt attention*

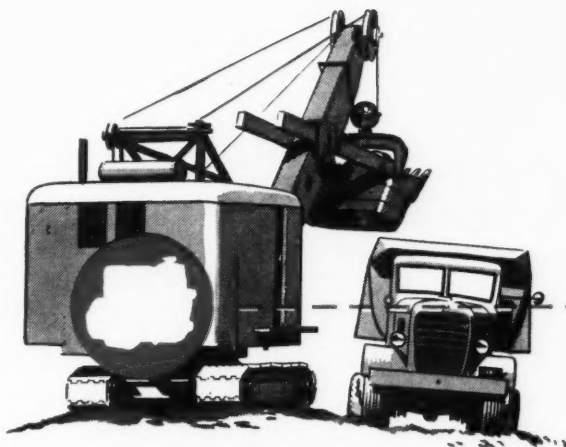
**103 PARK AVENUE
NEW YORK 17, N. Y.
Murray Hill 5-0166-0167-0168**

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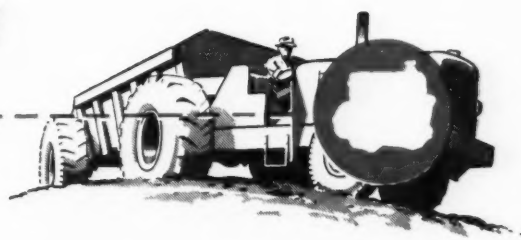
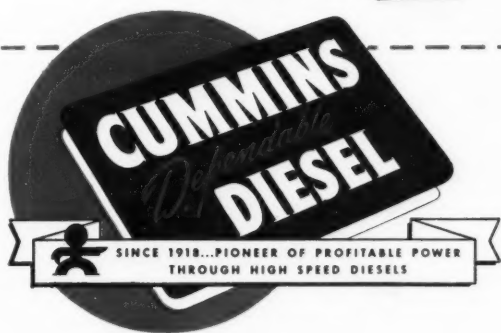
Watch this space



...and this space



...and this space



... for a new Cummins Diesel, built
with the rugged simplicity of the famous
"Model H" and designed to surpass
its 15-year reputation for profit-making performance and economy.
This is the *space to watch* next month.

CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA



**MAXIMUM SPEED—MINIMUM LABOR
CAN BE YOURS WITH THIS SLICK PAVER**

THE APSCO BASE PAVER

Model P-120, is a machine designed for macadam base and road mix paving. It is a ruggedly built paver that will stand up under tough usage encountered in this type construction. A crew of three men can lay up to 150 tons per hour. An absolute minimum of hand labor is required to get straight-edge accuracy. Forms are not necessary.—*This machine will more than pay for itself in a single season's work.*

**LOOK AT
THIS ➔**

- Up to 150 tons per hour capacity
- Lays 8' to 12' width (special cut-off for 7')
- Up to 12" thickness
- Oscillating screed
- Easily loaded on carry-all

**AND
THIS ➔**

- It is self-propelled
- Has dual-steering
- And hydraulic brakes
- Forms not required
- High speed reverse

CHANGING width or depth is simple, fast!

Write for complete specifications

THE ALL-PURPOSE SPREADER CO.
FULLER ROAD . . . ELYRIA, OHIO



TRUCK MIXER—Hi Lo machine has stationary mixer drum octagonal in plan. Across drum is main mixer shaft of 5-in. cold rolled seamless tubing. With tapered design of drum, material flows down sides to come into contact with mixing wheels. Discharge gate is sliding type operated by pinions working on rack to produce positive cutoff. The unit is in the 3-yd. mixer classification.—**Concrete Transport Mixer Co., 4985 Fyler Ave., St. Louis 9, Mo.**

FOOT RESTS for attachment to tractor, stationary engine or other platform on which operator must stand consists of thick, rubber mats which fasten with ¼-in. cap screws. Said to eliminate jar and fatigue from standing on hard surfaces. Specially designed safety tread of foot rest gives maximum traction and lessens accidents from slipping. Dimensions, 12 in. long, 6 in. wide, 1 in. thick.—**Waterloo Foundry Co., Waterloo, Iowa.**



AGGREGATE BIN—Available for use with one or two Hi-Speed multiple material batchers, the low, 11-ft. wide aggregate bin has 50-deg. bottom slopes. The 120- and 125-cu.yd. sizes ship in only two main sections and smaller sizes in one piece, enabling fast erection. Steel-frame mat assemblies eliminate the need for concrete footings on temporary set-ups, and the bin converts into a low-cost ready-mix plant with the substitution of long leg and cement roof sections and a truck-mixer weigh hopper.—**C. S. Johnson Co., Champaign, Ill.**

**TOUGH JOBS ARE
MADE-TO-ORDER FOR**

BARCO

Pavement breaking, rock drilling, and clay spading, tamping, driving ground rods or sheathing—the new Barco is a rough, tough, tireless worker. Self-contained, portable, the Barco Portable Gasoline Hammer will do a bang-up job any time of the year at any altitude. Barco's speed and power have been stepped up, with no weight increase. Carburetor valve is easier to operate, and a new method of holding the cable makes the hammer easier to handle and prolongs cable life. Eleven special attachments—each instantly interchangeable.

BREAKING · DRILLING · DRIVING · TAMPING

★
FREE ENTERPRISE—
THE CORNERSTONE OF
AMERICAN PROSPERITY
★



BARCO

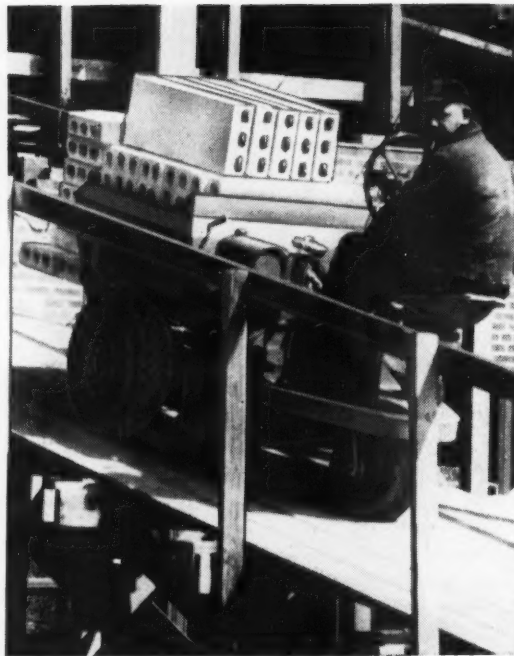
**PORTABLE GASOLINE
HAMMERS**

Write to BARCO MANUFACTURING COMPANY, 1812 WINNEMAC AVENUE, CHICAGO 40, ILLINOIS
IN CANADA: THE HOLDEN CO., LTD., MONTREAL, CANADA

Scoot-Crete easily "walks away" with a ton or more up a 20% grade. Pivot-point steering for complete control on steep descents or roughest ground. Rugged design for minimum service costs—pays off fast on any construction job.

SCOOT-CRETE*

*TRADE MARK



Your Next Step to Cost-Cutting

Put several Scoot-Cretes to work on your jobs. They eliminate back-breaking wheelbarrow work. They save time, cut costs.

Built to give years of service with a minimum of maintenance. Look at these unmatched features:

STURDY, TRUCK-TYPE AXLE—Plenty of extra strength for handling shock loads.

HIGH FLOTATION TIRES—Heavy-duty 7:50"x10" tires have plenty of ground contact area for positive traction in mud or soft dirt.

HEAVY-DUTY, WELDED STEEL FRAME—Will not twist out of shape when handling capacity loads on rough surfaces.

WORM STEERING—Gives operator complete control and freedom from fatigue at all times. No wheel shock, no jack-knifing.

PIVOT-POINT STEERING—Provides high maneuverability on narrow ramps and scaffolding.

1-TON CAPACITY—Box holds full mixer batch, 14 cu. ft. Scoot-Crete weighs only 1000 lbs. empty.

INTERCHANGEABLE PLATFORM—Change from dump box to platform in just a few minutes. Use platform for hauling bricks, blocks, form material, or tools.

SHOCK-ABSORBER SEAT—Gives maximum operating comfort.

6 H.P. AIR-COOLED ENGINE, 4-SPEED TRANSMISSION—Plenty of power to carry 1-ton up 20% incline.

DEALER,
DISTRIBUTOR
INQUIRIES INVITED

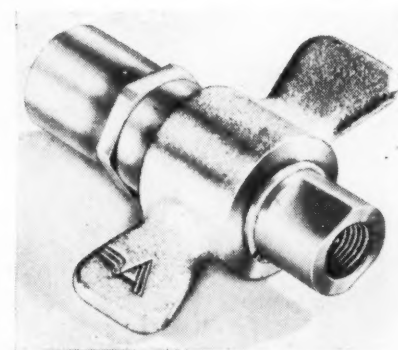


GETMAN BROTHERS MANUFACTURING DIVISION
Manufacturers of Materials Handling Equipment
SOUTH HAVEN, MICHIGAN



SELF-PROPELLED DRILL—Self-propelled McCarthy rock boring machine handles 4- to 12-in. augers for horizontal drilling up to 150 ft. in earth or rock formations, according to the manufacturer. Individually operated jacks permit adjustment to required drilling angle. Powered by a 25- or 32-hp. air-cooled motor, hydraulic drive cylinder has 35-in. stroke, to give carriage an 8-ft. travel on the 12-ft. by 24½-in. heavy channel welded frame. Also available in truck-mounted and trench types.—Salem Tool Co., Salem, Ohio.

COLD PAINT STRIPPER—Solution is said to remove paints, lacquers, enamels, synthetics, varnishes and wrinkles almost instantly and to require no neutralizing action other than a pressure water flushing or wiping well with a rag. Requires no heat and is non-inflammable. Primarily intended for dipping, but may be applied either by brush or spray.—Allied Finishing Specialties Co., 2639 W. Grand Ave., Chicago, Ill.



SELF-SEALING COUPLING—Hydraulic fluid lines may be connected or disconnected instantly without loss of fluid or inclusion of air with a self-sealing coupling. Flexible hose lines, suitable for low, medium, or high pressure application, are equipped with detachable reusable fittings for air, hydraulic fluids, gasoline, lubricating oils, fuel oils, and refrigerant gases at temperatures ranging from -65 to 300 deg. F.—Aeroquip Corp., Jackson, Mich.



FAST TRAVELING . . .

ALL THIS IN ONE MACHINE!

If you are looking for a real profit machine — here's your answer! For in the new P&H Truck Crane is a greater measure of everything that counts — mobility, work-ability, convertibility!

HERE'S WHY! P&H Truck Cranes are dual powered. For travel, there's an engine built for travel alone. You drive from job to job in fast time at regular highway speeds. For work, you have another engine — power that's right for doing this job faster, cutting costs.

A P&H Truck Crane also gives you the service of six machines—crane, shovel, clamshell, dragline, trench hoe and pile driver. Conversion is simple and fast — can be done in the field. Send for the facts now!

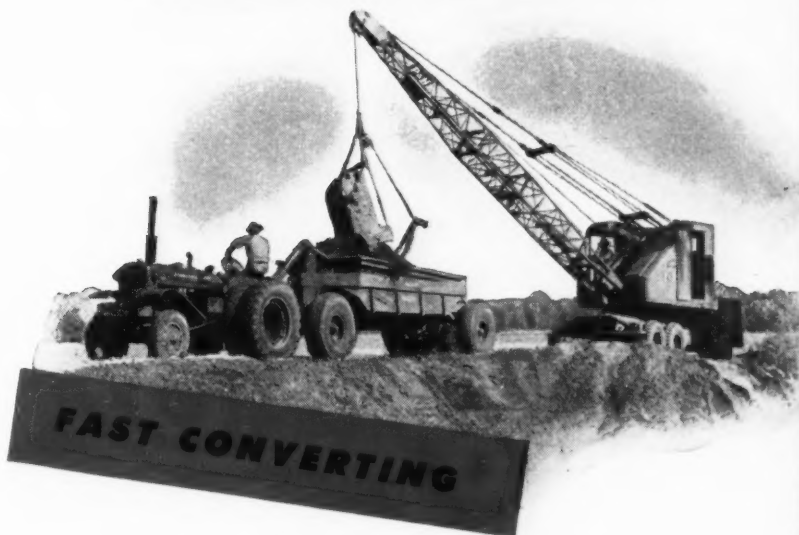


TRUCK CRANES

4494 W. National Ave.,
Milwaukee 14, Wis.



FAST WORKING . . .



FAST CONVERTING

P&H Added Values Mean Added Profits!

- Hydraulic control — a new peak in operating ease and safety
- Greater stability—with exclusive torsion bar-mounted front axle and lower center of gravity
- Independent planetary boom hoist — raises or lowers crane boom smoothly and safely, with or without load
- Planetary load lowering — permits "inching" of loads accurately
- All-welded construction — greater strength

Size for Size, No P&H Truck Crane Has Even Been Outlifted

REMOTE CONTROL AVAILABLE

With this unit you can control all carrier functions (even the horn!) by electric push-buttons — from the operator's position inside the crane cab.



SHOVEL



CLAMSHELL



CRANE



DRAGLINE

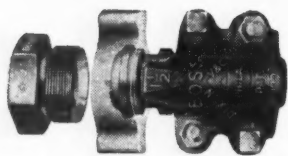


TRENCH HOE



PILE DRIVER

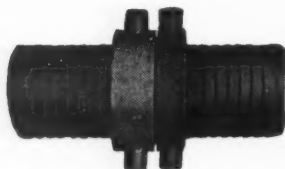
DIXON QUALITY Means More Efficient Hose Service, Lower Hose Costs



"G J-BOSS" Ground Joint
Female Coupling, Style X-34



"BOSS" Male Coupling
Style MX-16



"KING" Shank Coupling

For Suction and Water Hose. A reliable coupling that is absolutely uniform in quality, threading and dimensions. Quickly connected and disconnected. Made in all malleable iron; malleable iron with brass nut; or all brass. Shanks have deep, clean corrugations. Sizes 1 1/4" to 8".



"KING" Combination Nipple

With "Cor-O-Zig" Corrugations. Fits straight end hose of same I.P.T. size; easier to attach because of smoothly rounded spiralled end; holds tighter under clamp pressure because zig-zag corrugations provide two-way gripping surface. Sizes 1/2" to 10".



"KING" Single and Double
Bolt Hose Clamps

Strong, convenient, economical. Made of malleable iron, cadmium plated. Easily attached and can be used over and over again. Tightening provides evenly distributed all-round pressure on hose. Double bolt has exclusive quadruple take-up. All sizes.



"AIR KING"
Quick-Acting, Universal
Hose Coupling

For convenient, low-cost service on drills, hammers, spades and other pneumatic tools. Same size locking heads for all I.P.T. and hose shank sizes within its range. Has patented safety locking arrangement. Bronze or malleable iron, cadmium plated.



"G J-BOSS" Ground Joint
Air Hammer Coupling

Ground joint, WASHERLESS design and built for the real HEAVY DUTY hose jobs in construction, roadbuilding, quarrying, etc. Anchored to hose with tight-gripping "Boss" Interlocking Clamp. Compact and heavy types. Cadmium plated—rustproof. Also available in washer style.



NEW "DIXON" SWIVEL
CONNECTION

A new type free-swiveling connection for air, water and other hose lines. Prevents twisting and kinking—saves time, trouble and hose costs. Plain design; sturdy construction. Requires no lubrication or adjustment. Leakproof under all normal working pressures. 1/2" and 3/4" I.P.T. sizes, in cadmium plated steel.

Sold by Manufacturers and Jobbers of Mechanical Rubber Goods.

IF IT'S A **DIXON** PRODUCT
IT'S DEPENDABLE

DIXON

VALVE & COUPLING CO.

Main Office and Factory: **PHILADELPHIA, PA.**
BRANCHES: CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON



PAVING BREAKER—A 63-lb. concrete breaker with 23-in. over-all length, model B67, can be fitted with chucks for 1 1/8- or 1 1/4-in. hexagonal tools. Its design incorporates a safety latch on the throttle valve handle and a lubricator providing sufficient capacity for several hours' operation. —Gardner-Denver Co., Quincy, Ill.

National Carbide FLOODLIGHTS



FOR ALL
PURPOSES
FOR WHICH
FLOOD-
LIGHTS ARE
REQUIRED

Simple in construction
Economical in Cost
Dependable in Oper-
ation

Available in 1500,
8,000 and 16,000
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Lights illustrated. Write
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60 East 42nd St.
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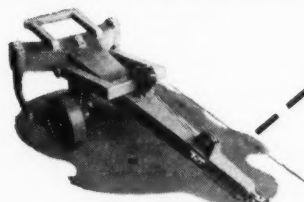
The *Control* You Need to Keep Dirt on the Move!



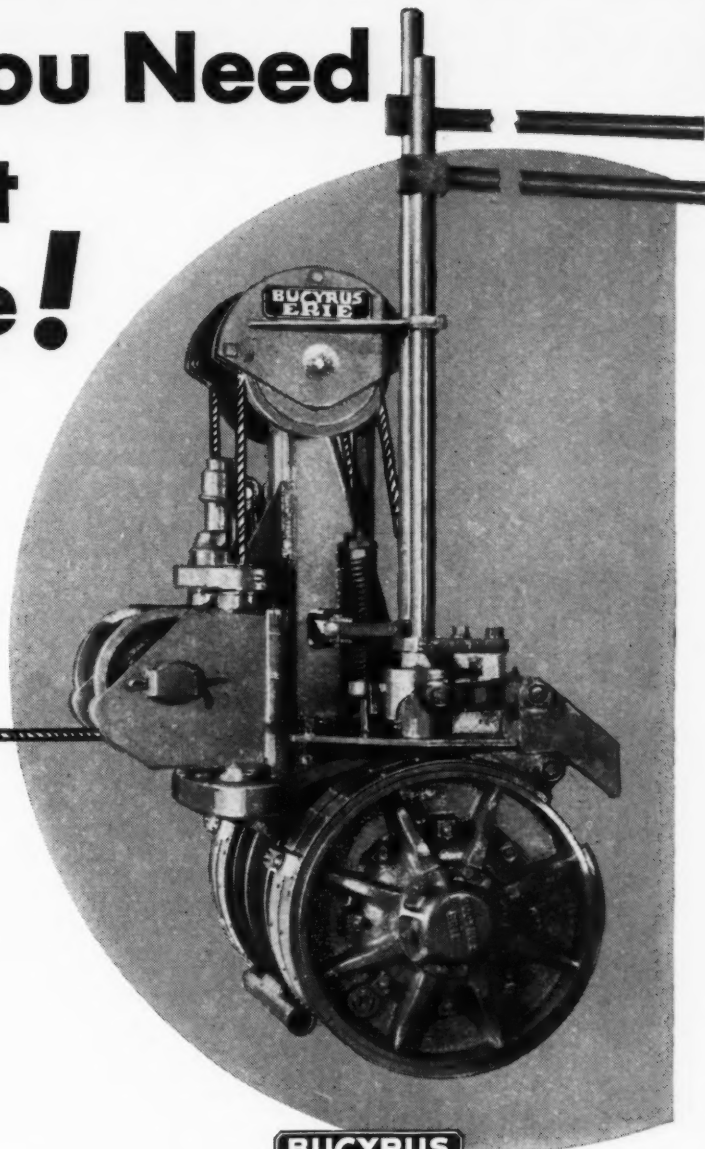
SCRAPERS



BLADE EQUIPMENT



RIPPERS



**BUCYRUS
ERIE**

SMOOTH, accurate, positive in action, and dependable day after day . . . that's control with Bucyrus-Erie Power Control Winches. Operators say they're the easiest handling winches on the market . . . that adjustments are simple and lasting . . . that maintenance is easy. Owners report that the cost of maintaining Bucyrus-Erie Power Control Winches is low . . . that they keep equipment operating at its best . . . and that —most important of all— they're **BIG** factors in keeping dirt on the move!

Investigate the single and double drum, front and rear-mounted models offered for use with International crawlers. See your International Industrial Tractor Distributor.

BUCYRUS-ERIE COMPANY, SO. MILWAUKEE, WIS.

For **BUCYRUS
ERIE** See Your
TRACTOR EQUIPMENT

**INTERNATIONAL Industrial
Tractor Distributor**

Power Control Winches

- **DOUBLE-DRUM** rear mounted for all sizes of International Crawler Tractors; **SINGLE DRUM** front mounted for TD-24
- **SIMPLE PLANETARY DRIVE**
- **ADJUSTABLE LEVERS**
- **EXTERNAL BRAKE SURFACES**
- **INTERCHANGEABLE REVERSIBLE BANDS**
- **MOULDED BRAKE LININGS**
- **ANTI-FRICTION BEARINGS**
- **SINGLE BEARING ADJUSTMENT**
- **SINGLE BAND ADJUSTMENT**
- **SINGLE OIL BATH LUBRICATION**
- **TRANSPARENT OIL LEVEL SIGHT**

106748

**TD
24**

LOAD-LUGGING

in your program



INTERNATIONAL

G LEADER

for pay dirt



The new "boss" of earthmoving is the International TD-24 Diesel Crawler. This mighty prime mover delivers 140 horsepower at the drawbar—puts that horsepower to work boiling up heaping loads into big scrapers in a hurry! It lugs those loads to the fill fast!

Rugged terrain and tough working conditions don't stop the TD-24. Perfectly balanced weight and power, ease of handling, efficient all-gear drive plus planet-power steering make it stand up and perform like the leader it is. That means *more work capacity—more profits in your pocket.*

Let your International Industrial Power Distributor give you the facts. He'll show you how the TD-24 sets new standards of production. You'll see why it's good business to standardize on International Power in your earthmoving equipment all along the line.

Employ the leader—the International TD-24—and support it with other International-powered equipment. Make it the heart of your program for pay dirt.

Standardize on International Power

Self-propelled Scrapers, Graders, Cranes, Shovels, Draglines, Air-Compressors, Portable Generators and other equipment are available *powered with International engines.* Specify International power in all equipment purchases!

Let your International Industrial Power Distributor help you select the right International-powered equipment for your requirements.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

Chicago 1, Illinois

Listen to "Harvest of Stars" every Wednesday on your CBS station



Industrial Power

CLEVELAND TRENCHERS

are Profit Producers

on your

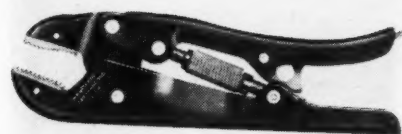


WATER
SEWER
DRAINAGE
IRRIGATION
CONDUIT
BUILDING
FOUNDATION
OIL
GAS and
GASOLINE
PROJECTS

Before the pipe must come the trench. That's why your trencher sets the pace for the whole project and to a big degree determines your profits. That's why a CLEVELAND is the logical machine for all your pipe line, conduit, drainage or irrigation jobs. And that's why you need CLEVELANDS many most desirable features, such as: Correct compact full-crawler wheel type design—All-welded, sturdy construction from the toughest, finer materials—Wide range of transmission-controlled speed combinations—Ease of control with complete operator visibility at all times—Maximum mobility at truck speed on truck or trailer—Ample power, correctly applied—Extremely low fuel costs—Minimum maintenance—Quick, easy field repairs because of unit-type construction.



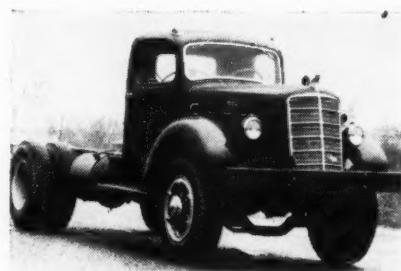
THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO



WISE PLIERS—Finger tip release, one flat and one curved jaw, and a double-action adjusting screw on "Gripso" vise pliers make them adaptable for many different uses. The adjusting screw, which employs both left- and right-hand threads to cut adjusting time, and finger-tip release can both be operated with one hand.—H. R. Basford Co., San Francisco, Calif.



PILE TIPS—Bearing value of a pile is increased and driving is straight with the Cobi pile tip. With full ground contact over the entire area of its inverted paraboloid, the tip builds a tightly consolidated pressure bulb of greater density, reducing settlement to the minimum. Tips are available for timber, precast concrete and cast-in-place steel piles.—Albert Pipe Supply Co., Inc., Berry & N. 13th St., Brooklyn 11, N. Y.



MACK TRACTOR—Powered by a 431-cu. in. Thermodyne engine, a 45,000-lb. basic gross-combination-weight tractor is specially designed for high-speed operations. The engine develops 139 hp. at its governed 2,500 rpm. and has a high torque output of 330 ft.-lb. at 1,400 rpm. A 13 $\frac{3}{8}$ -in. dia. single-plate dry clutch links the engine to either a five-speed or new ten-speed duplex transmission. Box-girder construction produces a strong frame and safety is stressed throughout. Air brakes have 533-sq. in. area.—Mack Trucks Inc., New York, N. Y.



Stand Pat

with this Pair!

Back your play with Heiliner Scrapers and Bottom-Dump Wagons—and rake in larger earthmoving profits

Here's what the Heiliner Tractor gives you: 22 mph speed with 16 and 18 cu. yd. loads. Full traction and an over-all gear reduction of 153 to 1 for unusual load-lugging power. Diesel economy. Passenger-car steering through use of patented Heil Hydro-Steer. 65-degree turning angle. 22-ft. turning radius.

The Scraper gives you: 16-yd. capacity and open-top for greater heaped loads. Fast bonus loading—bowl design eliminates pockets and voids. Greater digging ability—weight of scraper is placed on

cutting blade for better penetration. Fast, clean dumping—tilting floor and wide-opening front apron get rid of the load in a hurry. Spreading depth from 0 to 24".

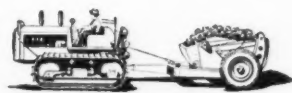
The Bottom-Dump Wagon gives you: 18-yd. capacity. The bottom dump doors open along sides to eliminate dragging. High 35-inch clearance. Fast, clean dumping.

You can't lose with this Heiliner pair—the scraper and bottom-dump wagon are interchangeable. Get all the details from your International Industrial Power Distributor. Write us for literature.

R-98



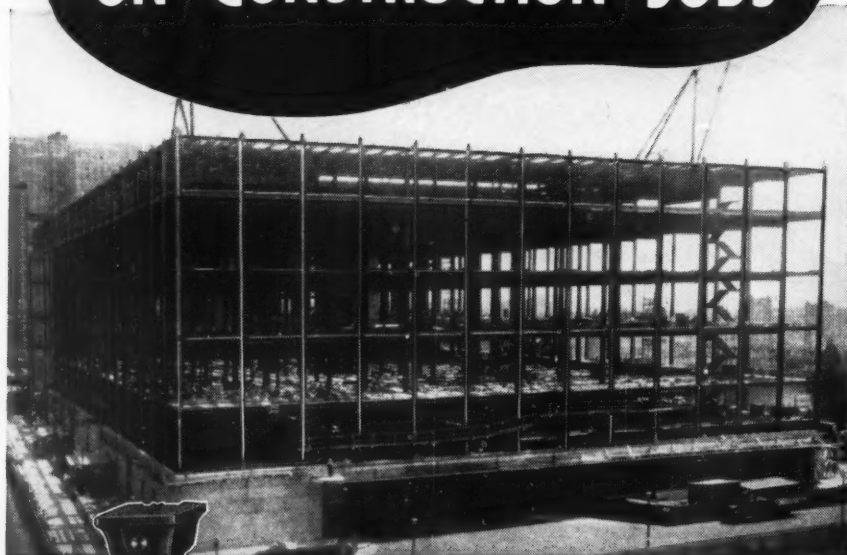
Hydraulic Trailbuilder



3½ yd. Rear Dump Scraper

THE HEIL CO.
GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Eliminate Back Breaking Effort ON CONSTRUCTION JOBS



WITH DUFF-NORTON JACKS

Many heavy lifting, back breaking construction jobs are made easy with Duff-Norton Jacks. Contractors use them for loading and unloading heavy equipment, bracing and shoving sections, lifting and holding plates for welding or riveting, repairing mobile equipment, tearing down old structures and unlimited other applications.

Write for Catalog

There's a Duff-Norton Jack for every construction need. Write for your copy of our catalog today.



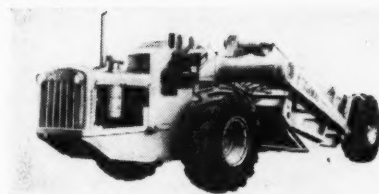
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SEE YOUR LOCAL INDUSTRIAL DISTRIBUTOR

THE DUFF-NORTON MANUFACTURING CO.

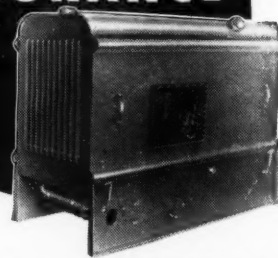
The House that Jacks Built • PITTSBURGH 30, PA.

THE WORLD'S OLDEST AND LARGEST MANUFACTURER OF LIFTING JACKS



ELECTRIC-CONTROL TOURNA-PULL—Matched with a 13.3-cu.yd. or 16-ton scraper, the model C Tournapull is powered by a 150-hp. 6-cylinder diesel engine and has four forward speeds from 2.2 to 17.3 mph. Steering, scraper bowl, apron and tailgate are controlled by individual electric motors supplied by a 240-v. 120-cycle a.c. generator built in line with the engine. Constant mesh transmission allows instantaneous selection of gear ratio without shifting or loss of momentum. Other features are a torque proportioning differential, 21x25 tapered bead tires, multiple disk air brakes, and a 130-gal. fuel tank. The model C has more than a 90-deg. turning angle and can turn around in 14 ft. 6 in. Over-all specifications with scraper are: length 31 ft.; height 9 ft. 3 in.; width 11 ft. 4 in.; wheelbase 18 ft. 2 in.; and empty weight 29,220 lb. —R. G. LeTourneau Inc., Peoria, Ill.

HERE'S SAFETY INSURANCE



When power goes off, your Fairbanks-Morse generating plant goes on! Automatic... instant... dependable! That's the best description of a Fairbanks-Morse generating plant—the kind you'll find in hundreds of hospitals, institutions, theaters, and other places where service *must* go on in spite of power failure! You, too, should take this precaution, plan to install a Fairbanks-Morse generating plant at once. Available in A.C. or D.C. types; automatic or remote control; 350 to 35,000 watts—a model for every need. For full information write Fairbanks, Morse & Co., Chicago 5, Illinois for folder ADB-400.

FAIRBANKS-MORSE



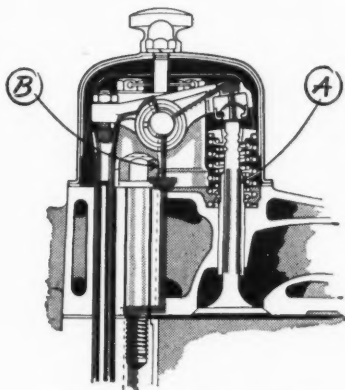
A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALERS • MOTORS • GENERATORS
PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

STANDARD ENGINEER'S CASE FILE



CASE D119C--PROVIDING GOOD VALVE ACTION IN DIESEL ENGINES.



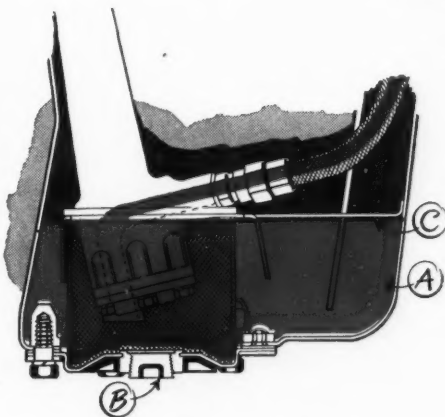
DIESEL ENGINE VALVE ASSEMBLY

When Diesel engines, operating in tough heavy-duty service, were lubricated with compounded RPM DELO Diesel Engine Lubricating Oil, valve stems and guides did not gum up. They received thorough lubrication at all times and wear was negligible. RPM DELO Oil is recommended for all types of Diesels. Comes in several viscosity grades to meet all conditions.

- A. Specially selected oxidation-resistant base stocks and special compounds prevent formation of gum and lacquer...oil film adheres to hot or cold metal surfaces.
- B. Detergent compound keeps oil passages clean and open...and allows free flow of adequate supply of lubricant to wear points.

RPM DELO Diesel Engine Lubricating Oil is non-corrosive to all bearing metals. This quality and high stability assure sound bearings in Diesels for long service periods.

CASE D119D--KEEPING PARTS CLEAN AND REMOVING CONTAMINANTS FROM DIESEL ENGINES.



DIESEL ENGINE CRANKCASE

Cylinder walls, pistons, bearings and other parts of Diesel engines in heavy-duty service remained free of lacquer, and all contaminants flowed out with drainings when RPM DELO Diesel Engine Lubricating Oil was used.

- A. A special compound in RPM DELO Oil loosens and removes lacquer and other deposits from parts and oil passages...and they stay harmlessly dispersed in the oil.
- B. The finely dispersed contaminants, including condensate and dust, flow out freely when crankcases are drained.
- C. Another compound in RPM DELO Oil prevents foaming—allows accurate measurement of oil levels and delivery of sufficient lubricant by oil pumps.

The engine-cleaning qualities of RPM DELO Oil help reduce wear on parts and prolong greatly the operating periods between engine overhauls.

For additional information and the name of your nearest Distributor, write

**STANDARD OIL COMPANY
OF CALIFORNIA**

225 Bush Street, San Francisco 20, California

The California Oil Company

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17th and Stout Streets, Denver 1, Colo.

Standard Oil Company of Texas

El Paso, Texas



Trademarks Reg.
U. S. Pat. Office



you'll replace fewer shovels if they're "surface peened" RAZOR-BACKS



Ordinary shovels are 15 gauge steel overall; RAZOR-BACKS are heavy 13 gauge up thru the center, to strengthen the cutting edge, frog and socket, and tapered to 17 gauge at the sides where shovels never wear out. They wear much longer yet weigh no more.

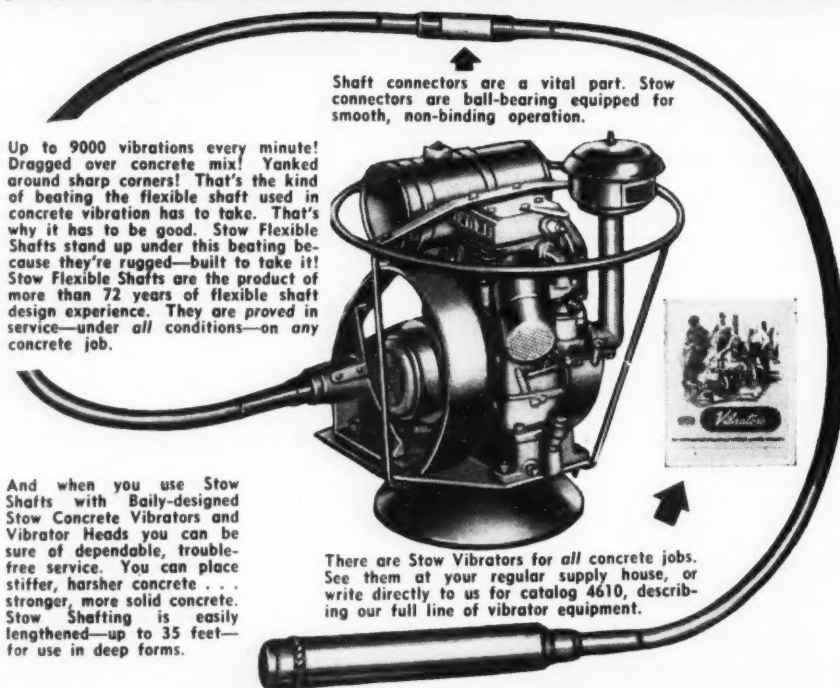


"Surface-Peened": In addition to its full-length backbone, every shovel is cold-worked following heat treatment, tests $2\frac{1}{2}$ to 5 times tougher than shovel steel that is only heat treated.

ALL RAZOR-BACKS are deep hung, perfectly balanced. Send for Catalog, prices and distributor's name.

THE UNION FORK & HOE CO., 633 Hocking St., Columbus 15, Ohio
STONE, BALLAST, INDUSTRIAL FORKS — ASPHALT AND ROAD RAKES

STOW Flexible Shafts are TOUGH! They keep your vibrator on the job.



Up to 9000 vibrations every minute! Dragged over concrete mix! Yanked around sharp corners! That's the kind of beating the flexible shaft used in concrete vibration has to take. That's why it has to be good. Stow Flexible Shafts stand up under this beating because they're rugged—built to take it! Stow Flexible Shafts are the product of more than 72 years of flexible shaft design experience. They are proved in service—under all conditions—on any concrete job.

And when you use Stow Shafts with Baily-designed Stow Concrete Vibrators and Vibrator Heads you can be sure of dependable, trouble-free service. You can place stiffer, harsher concrete . . . stronger, more solid concrete. Stow Shafting is easily lengthened—up to 35 feet—for use in deep forms.

Shaft connectors are a vital part. Stow connectors are ball-bearing equipped for smooth, non-binding operation.

There are Stow Vibrators for all concrete jobs. See them at your regular supply house, or write directly to us for catalog 4610, describing our full line of vibrator equipment.



CONCRETE MIXER — Multiple V-belts replace customary gear or chain sprocket drive on this small concrete mixer. $3\frac{1}{2}$ -S model changes entry of water from automatic water measuring tank through charging side of mixer. New lever arrangement on hopper gate keeps operating parts outside hopper, and manually-controlled shaker is provided for use when required.—Kwik-Mix Co., Port Washington, Wis.

SELF-LOCKING PLIER—This plier locks by normal hand pressure instantly and without adjustment. Power made possible by a special cam action gives the plier great cutting pressure. It is made of drop-forged chrome vanadium steel with hardness rated at Rockwell RC 52-54. It will cut 19-strand No. 1 electric cable, 30-penny spikes and $\frac{1}{4}$ -in. bolt stock or rod.—Ross Mfg. Co., 300 Montgomery St., San Francisco 4, Calif.



TWO-UNIT PORTABLE QUARRY PLANT—Mounted on pneumatic-tired chassis, a 2-unit portable quarry plant is designed for large production. Primary feeding and crushing is accomplished by the first unit, leaving the other for secondary crushing and screening. Split-feed arrangement to the screens of the secondary plant provides two complete screening surfaces for specification material.—Pioneer Engineering Works, Inc., Minneapolis, Minn.

STOW Manufacturing Co., Inc., 31 Shear St., Binghamton, N. Y.

4 BRAND NEW MICHIGAN TRUCK SHOVEL-CRANES...

SERIES

8



**½ YARD
8 TON**

Here's a range of four completely new half-yard MICHIGANS designed to meet your particular job requirements. Your choice of single-engine power or twin-engine power, two-wheel drive or four-wheel drive. Remote control, which permits fast, easy maneuvering on the job, is available as optional equipment on the twin-engine models.

MICHIGAN

Get all the facts! Write for
your copy of Bulletin 101.



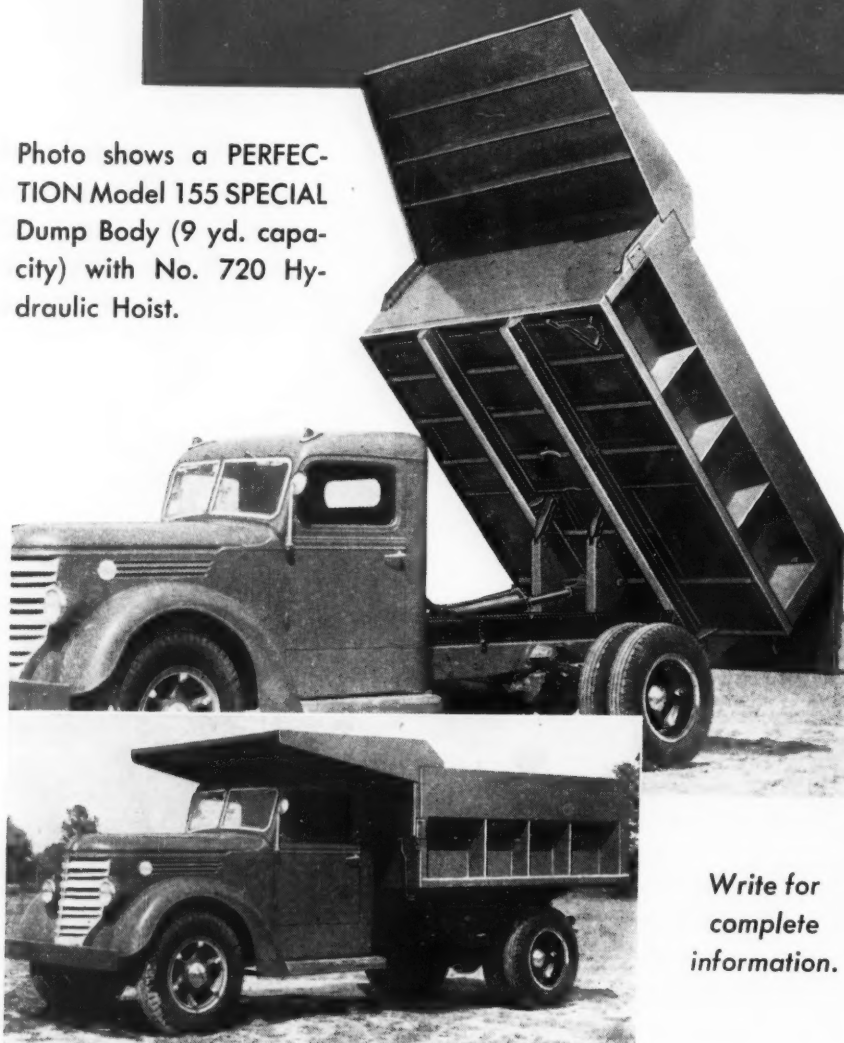
MICHIGAN POWER SHOVEL CO.

495 MILLER STREET, BENTON HARBOR, MICHIGAN, U. S. A.

PERFECTION IS THE NAME TO REMEMBER

when you want a -
**PROFITABLE RETURN
ON YOUR INVESTMENT IN
BODIES & HOISTS**

Photo shows a PERFEC-
TION Model 155 SPECIAL
Dump Body (9 yd. capa-
city) with No. 720 Hy-
draulic Hoist.



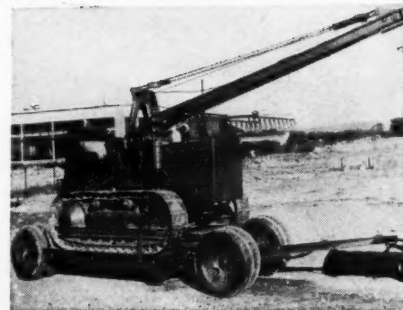
Write for
complete
information.

THE PERFECTION STEEL BODY COMPANY
Galion, Ohio, U. S. A.

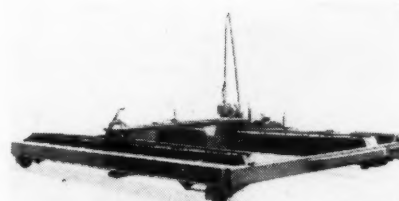
PERFECTION
STAKE and DUMP BODIES
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FOR ANY TRUCK
STANDARD or SPECIAL UNITS
IN ALL SIZES : FOR ANY USE



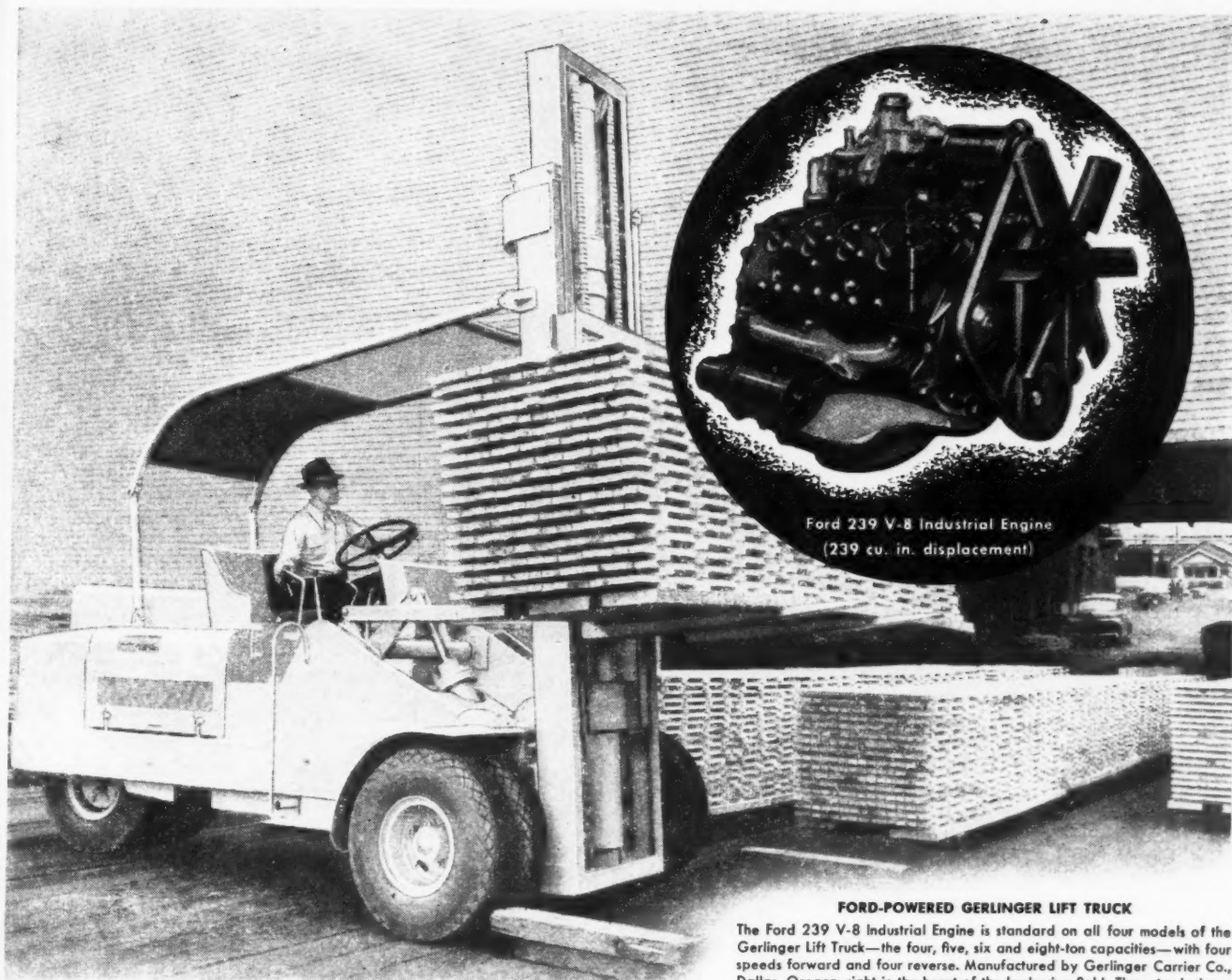
HAULING TRAILER—Flatbed, two-
axle, front-loading model T-10 trail-
er is designed for hauling many
types of construction equipment and
materials. Features are low loading
height (under 24 in.), sturdy con-
struction, even weight distribution,
generous-size tires, and 4-wheel elec-
tric brakes. Two adjustable feet con-
trolled by a built-in hydraulic jack
permit easy removal of the front
axle and tongue for loading and un-
loading.—**Cleveland Trencher Co.,**
20100 St. Clair Ave., Cleveland 17,
Ohio.



LONGITUDINAL FINISHER—For
finishing concrete longitudinally a
finisher combines flexibility in width
adjustments, a hydraulic screed lift,
a change in the power unit position
to shorten the drive shaft, and a
cranking facility to effect changes in
screed elevation for crown adjust-
ments. A mechanically accurate fin-
ish is produced.—**Koehring Co., 3026**
W. Concordia Ave., Milwaukee 10,
Wis.



FOUR-WHEEL SCRAPER—Cable-
controlled unit of 7.6 cu. yd. heaped
capacity is designed for use with 55-
hp. tractor. Model 508 takes a deep
cut 12 in. below tires and cascades
earth into bowl which is of pivoted
type. Specifications include: over-all
width, 8 ft. 10 in.; wheel base, 14 ft.
6 in.; over-all length including draw-
bar, 23 ft. 6 in.; bowl width inside, 7
ft. 6 in.; depth of spread above tires,
18 in.; bowl clearance raised for
hauling, 18 in.; apron opening, 36 in.;
weight, scraper only, 10,200 lb.—
Gar Wood Industries, Inc., Wayne,
Mich.




FORD-POWERED GERLINGER LIFT TRUCK

The Ford 239 V-8 Industrial Engine is standard on all four models of the Gerlinger Lift Truck—the four, five, six and eight-ton capacities—with four speeds forward and four reverse. Manufactured by Gerlinger Carrier Co., Dallas, Oregon, right in the heart of the lumbering field. These trucks have proven their superiority in flexible, economical materials handling which in a large measure is due to the excellent performance of Ford Industrial Engines. Continuous user of Ford power for over 25 years.



Be Right **3** Ways with FORD Industrial Power!

- 1 Right Power!** Not just one, but your choice of five rugged workhorses in the new Ford Industrial Engine line. There's one tailor-made to fit your power needs.
- 2 Right Features!** When you specify Ford Industrial Engines you can be sure your power source is right up to the minute, with all the latest features of Ford's progressive, "out front" engineering.
- 3 Right Service!** Ford Dealers are everywhere, with the facilities and experience for keeping Ford Industrial Engines right on the job—for longer life, greater service, lower costs.

 For more power, better power—it's Ford. And now the famous Ford "Power-Family" boasts five rugged engines—a "four" of 120 cu. in. displacement . . . two "sixes"—226 cu. in. and 254 cu. in. displacement . . . two V-8's—239 cu. in. and 337 cu. in. Every one new all through—the power that's right for you! Full specifications on request by return mail. Send postcard today!

FORD MOTOR COMPANY
INDUSTRIAL AND MARINE ENGINE SALES DEPARTMENT

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YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED

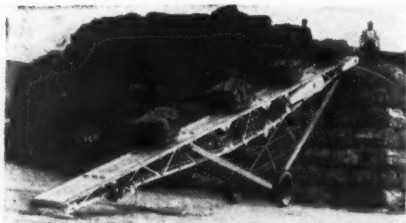
Unloads 1000 Tons of gravel in 6 hours

with Farquhar Trough Conveyor



SIX hours to unload over 1000 tons of road gravel—that's the pace set by this Farquhar Model 334-T Trough Conveyor for an Illinois contractor. Savings in time and back-breaking work more than paid for the initial investment.

General-utility Farquhar Trough Conveyors save time and man-hours handling sharp or abrasive materials, fine or powdery materials, small bags or bundles for contractors, processing plants, chemical plants, coal yards, road builders—wherever handling operations



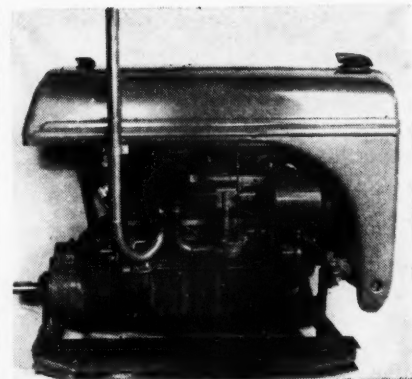
PILING BALES OF CORK at New Jersey processing plant is handled quickly, efficiently, economically by heavy-duty V-truck-mounted Farquhar Conveyor, Model 432. Easily handles bales or packaged goods weighing up to 500 lbs.

enter into the profit-or-loss picture. Low feed end of trough unit makes it efficient for unloading hopper bottom cars or for hand feeding.

Whatever your handling job—find out from us how to do it *faster, better, cheaper*. Farquhar offers a complete line of conveyors for portable, semi-permanent or permanent use—for all types of loose or packaged materials. Tell us your problem—we have the know-how to help you. Write for information to: A. B. Farquhar Co., *Conveyor Division*, 232 Duke St., York, Pa., or 622-A W. Elm St., Chicago 10, Ill.

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PORTABLE OR PERMANENT
MATERIALS HANDLING
CONVEYORS

HYDRAULIC PRESSES • FARM EQUIPMENT • FOOD PROCESSING AND SPECIAL MACHINERY



STATIONARY POWER UNITS—

Mounted on a skid base and equipped with a heavy-duty clutch assembly, oversized oil pan and radiator, these semi-portable power units are built around Ford 4, 40 hp.; Ford V-8, 100 hp.; and Lincoln 120-hp. engines. Optional equipment permits gasoline, diesel, butane, propane, or natural gas operation, and power take-off pulley or sheaves are furnished to comply with purchaser's specifications.—Funk Mfg. Co., Coffeyville, Kan.

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This Giant **McKIERNAN- TERRY**

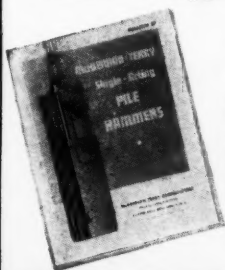
SINGLE-ACTING PILE HAMMER

Handles Historic Jobs

IT is one of two S14 McKiernan-Terry hammers used on the construction of the great Potomac River Bridge at Ludlow Ferry, Md. Here it drove 194-ft. steel piles to cut-off 85 feet below water.

Later, one of these two huge, 14-ft.-tall hammers demonstrated its tremendous power for the Texas & Pacific Railroad in driving test piles for the Morganza Spillway in the lower Mississippi . . . Still again it drove piling for the approach to the Louisville & Nashville Railroad bridge over the Ohio from Howell, Ind. to Henderson, Ky. . . . And now these two hammers are being used on a pile-driving contract in Venezuela.

McKiernan-Terry Single-Acting Pile Hammers are specially designed to deliver powerful blows with a heavy mass ram at low velocity at point of impact. This is of vital advantage where substance to be penetrated offers severe resistance—blue clay, heavy "gumbo", incipient shale, hard pan, compacted gravel, etc. . . . Also in driving heavy mass piles, such as pre-cast concrete . . . They are the **ONLY** single-acting hammers that will operate under water, being totally enclosed . . . Supplied in five standardized sizes.



Write for this Illustrated Bulletin

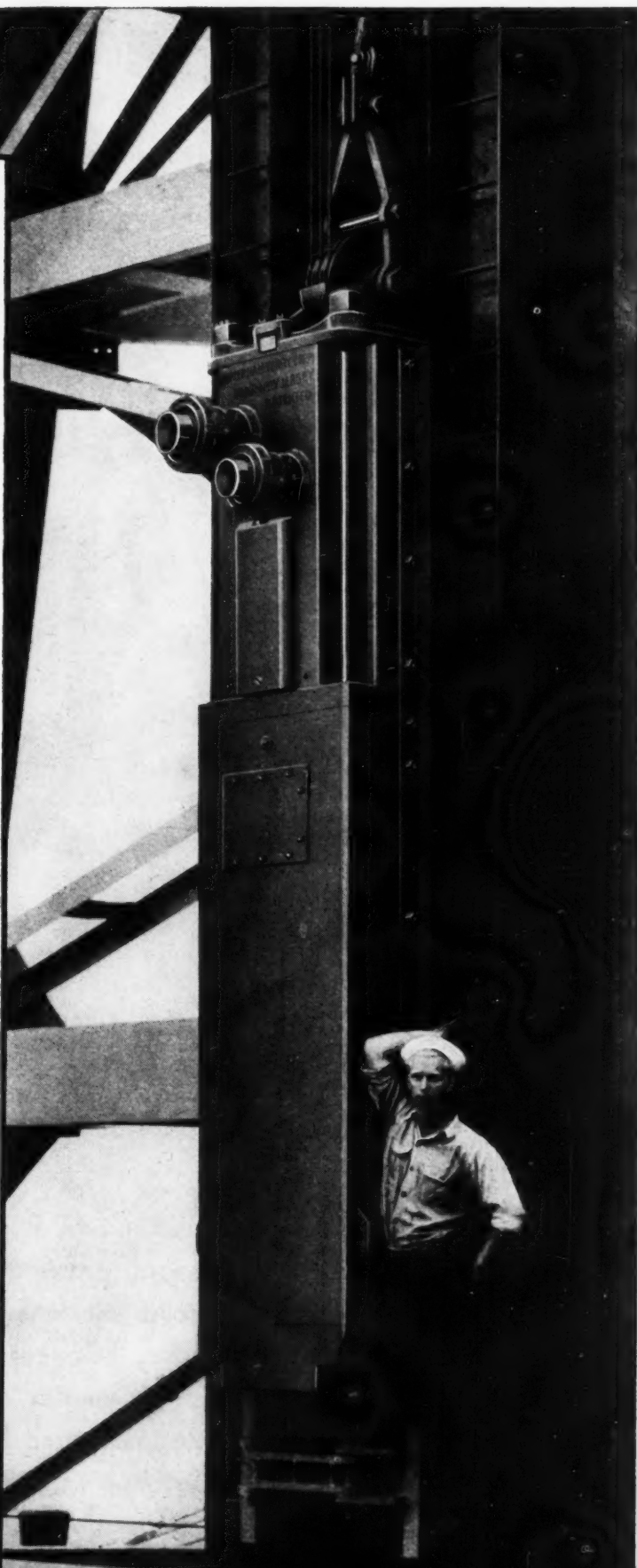
Get your free copy of McKiernan-Terry Bulletin #57, giving full information, specifications, diagrams, operating notes, etc. Sent you promptly on request.

MX-248

McKiernan-Terry

CORPORATION

MANUFACTURING ENGINEERS
14 PARK ROW, NEW YORK 7, N. Y.



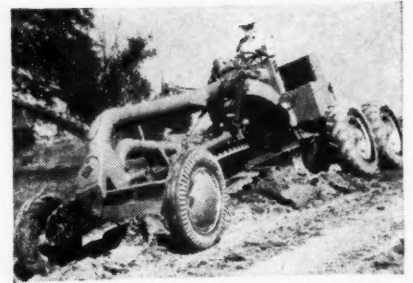
**7 YEARS
DEVELOPMENT**

**ON FIELD TESTS
IN EVERY TYPE
OF PROSPECTING
AND STRIPPING
THROUGHOUT
THE WORLD.**



The Parmanco Single Speed Transmission Drill is designed to meet the requirements of the general prospecting field where it is not necessary to drill in solid limestone. Special sliding frame permits drilling and pulling of augers without moving drill. New design of chuck eliminates all hand operation in raising power plant. Recommended for 50 to 60 feet with four and one-half inch equipment. Under favorable conditions it is being used to greater depths.

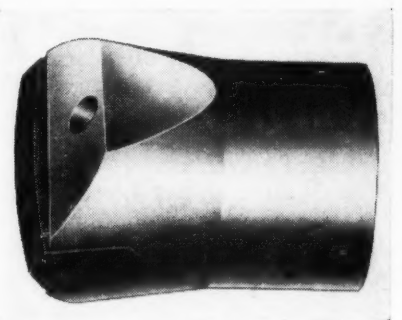
PARIS MANUFACTURING COMPANY
PARIS, ILLINOIS



MOTOR GRADER—Tubular frame design absorbs and distributes shocks during operation of the BD 50-hp. motor grader. The "Roll-Away" moldboard cuts down friction, and blade maneuverability provides extensive range. Clearance from the cutting edge to the circle is 28 in. Six forward speeds from 1.3 mph. to 14.7 mph. and three reverse speeds from 1.5 mph. to 5.4 mph. are provided. Engine parts and other assembly units are interchangeable with the AD grader. — **Allis-Chalmers Mfg. Co., Tractor Division, Milwaukee, Wis.**

AIR-POWERED DRILL JUMBO—

The Boom-Jumbo features air-powered booms of light, rigid construction which can be raised or lowered at touch of a lever. Air motors insure a positive screw-drive, and booms are locked in position during operation. The drill jumbo can work in an opening 9 ft. high and 5 to 14 ft. wide. Controls are located on the front end of the booms for the operator's convenience. Three screw-driven, adjustable-length ceiling jacks mounted on car hold it in place during drilling. — **Ingersoll-Rand Co., Phillipsburg, N. J.**



CHISEL-TYPE ROCK BITS—With a blade mechanically seated in the body, chisel-type rock bits can be screwed on standard drill rods. Braze strains are eliminated by the new seating method, and water ports in both bevels give positive circulation. Bits come in sizes of 1 3/8, 1 1/2, 1 5/8, 1 3/4, 2, and 2 1/4 in. with a shouldered contact between bit body and drill rod. Drilling speeds and life of bit are increased. No conversion of existing equipment is necessary in using the bit. — **Kennametal Inc., Latrobe, Pa.**

What Good is a
GUARANTEE
?

Whatever you buy, you want to know your purchase is honestly represented in materials, workmanship, and performance. You don't want a gamble. When the first truck mounted power shovel was built there wasn't much company, no guarantee, but that first shovel was the forerunner of all "**QUICK-WAYS**."

Five thousand "**QUICK-WAYS**" have been produced in the past 30 years. The success of each one has added to the meaning of the "**QUICK-WAY**" guarantee of low first cost . . . simple, economical operation . . . long life . . . and dependability.

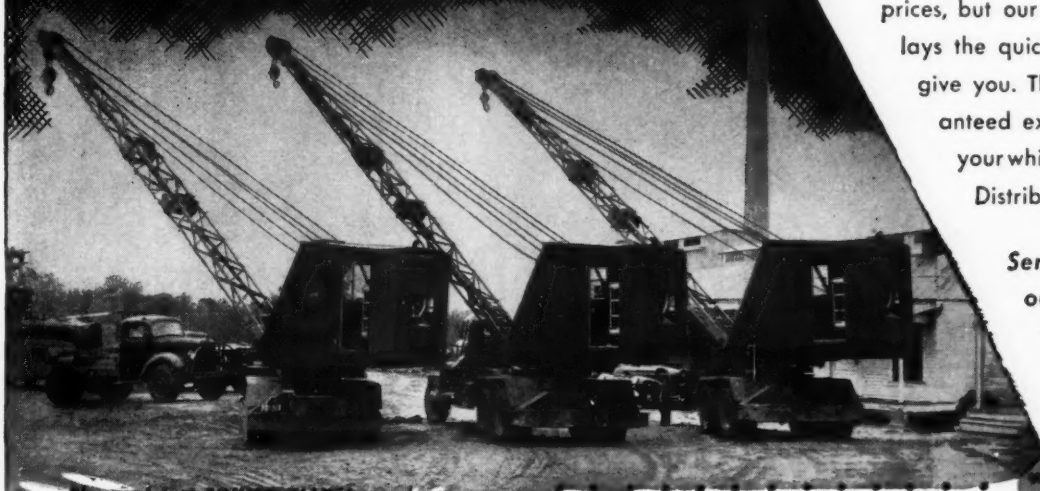
There's plenty of proof that "**QUICK-WAYS**" can serve you profitably. Multiple attachments make one truck mounted unit serve as a shovel, crane, dragline, scoop, pile driver, clamshell, back-filler and trench-hoe, eight in all with just a few minutes' change-over time. Inter-changeable working and control parts cut repair bills and maintenance time. Proper balance and weight that's all working, plus adequate power, speed operation TO and ON the job

... more work per day at less cost.

We've raised production instead of prices, but our backlog of orders delays the quick delivery we'd like to give you. The "**QUICK-WAY**" guaranteed extras will make it worth your while to order now. Ask your Distributor for delivery dates.

Service available from
our Distributors strategically located in
the United States
and worldwide.

The
"**QUICK-WAY**"
to tell...



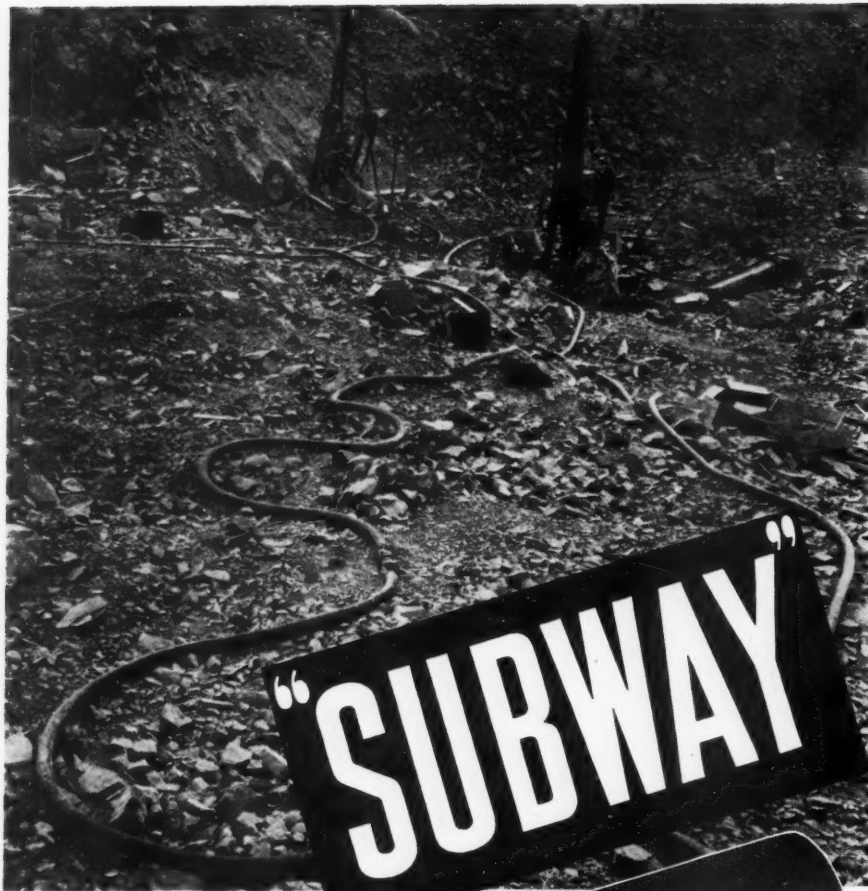
Three of five "**QUICK-WAYS**", used as cranes, owned by a large Southern plywood manufacturer.



Model E: 4/10 cu. yd. cap., mounts on standard 5-ton truck.

Model J: 1/4 cu. yd. cap., mounts on standard 1 1/2-ton truck.

"QUICK-WAY"
TRUCK SHOVEL CO.
DENVER, COLORADO



A Tough HOSE FOR Rough SERVICE!

"SUBWAY" is the buy-word for air hose that must take extra punishment. Readily identified by its distinctive red cover and the famous Cloverleaf trademark. Perfectly balanced construction assures equally long life for cover, carcass and tube . . . no failure of one part to cause hose to be scrapped while remainder is still fit for duty. A "Standard of Quality" product in sizes $\frac{1}{2}$ " to $1\frac{1}{4}$ ", lengths up to 50 feet.

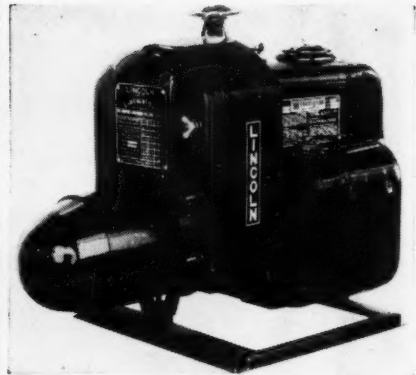
Prompt delivery to your job, from a nearby Goodall branch.



GOODALL RUBBER CO., INC.

THE GOODALL-WHITEHEAD COMPANIES
MILLS and EXPORT DIVISION, TRENTON, N. J.—ESTABLISHED 1870

Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles
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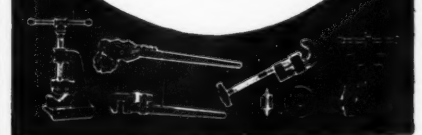
PORTABLE WELDER—An inexpensive, complete, lightweight portable welder is roughly 2 ft. wide, 2 ft. high and 4 ft. long. With a current range from 20 to 180 amp., the machine provides three ranges of output current on the output panel, generator controls in an inclosed cabinet above the generator (cooled through a fan mounted on the generator shaft) and mounting rails. The welder is powered by a 2-cylinder air-cooled engine. Engine speed (1,800-2,300 rpm.) determines welding current. Net weight is 502 lb.—Lincoln Electric Co., Cleveland 1, Ohio.



"ARMSTRONG Bros." Chain Tongs come in "Standard", "Reversible Jaw" and "Ideal" (V-jaw) types—in sizes for every need. Their drop-forged jaws have milled teeth, are hardened, tempered and tested for wearing qualities. They have heavy forged-in lugs that give extra bearing on the handles to which they are rigidly held by a large hardened steel bolt. The handles are forged and heat treated to the correct balance of stiffness and spring. Shackles are drop forged and chains proof-tested to 2/3 catalog strength (3,600 lbs. to 40,000 lbs.).

Write for Chain Tongs Circular

ARMSTRONG BROS. TOOL CO.
5234 W. Armstrong Ave., Chicago 36, U.S.A.
Eastern Whse. and Sales: 199 Lafayette St., New York 12, N. Y.
Pacific Whse. and Sales Office: 1275 Mission St., San Francisco 3, Calif.



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MAKE MORE PROFIT...
*...Coming and
 Going*



Above: 200 H.P. Terra-Cobras at work on U. S. Highway 666 near Cochise, Ariz.

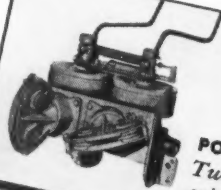
SCRAPERS: Boiling Bowl and Terra Clipper
 Scrapers from 7.5 to 27.5 cu. yd. heaped capacities.



RIPPERS: Three models: for extra heavy,
 standard, or light duty.



POWER CONTROL UNITS:
 Two-drum Winches for use
 with all standard tractors.



...with WOOLDRIDGE earthmoving equipment

Regardless of the size of the job—the type of dirt or length of haul, you'll make more profit per yard with Wooldridge Equipment—and here's why: Wooldridge high-speed, self-propelled Terra-Cobras and tractor-drawn scrapers are built to load and dump heaping yardages faster—to travel and spread with greater balance and speed. What's more, Wooldridge equipment works more hours per shift with less down-time and yardage loss. And by reducing operator-fatigue with its resultant slowdowns and carelessness, Wooldridge equipment maintains consistent hourly averages throughout each entire shift. Join the trend of leading contractors—bid your jobs on Wooldridge's proved productive performance for more profit coming and going. Get full details today.

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 SUNNYVALE, CALIFORNIA, U. S. A.



SEE YOUR NEAREST WOOLDRIDGE DEALER

GET THE MOST OUT OF YOUR JOBS WITH WOOLDRIDGE EQUIPMENT



SCRAPERS



BULLDOZERS



RIPPERS



POWER CONTROL UNITS

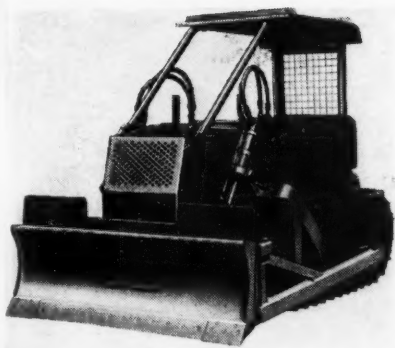


TRAIL BUILDERS

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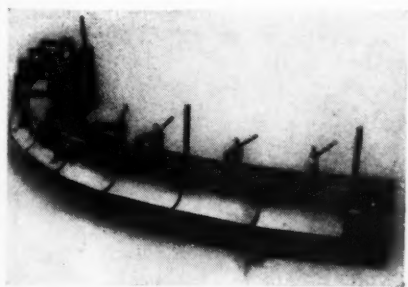
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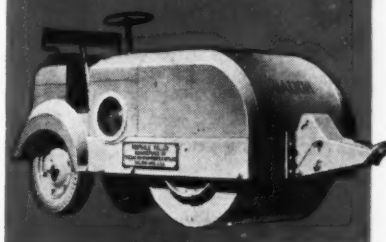
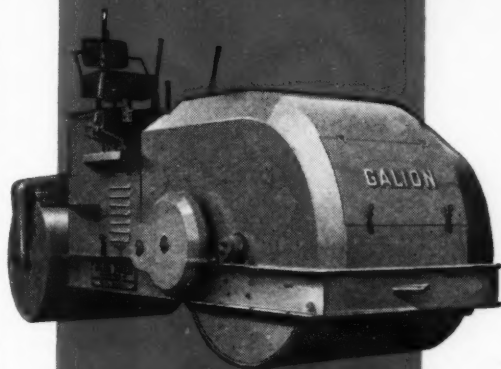
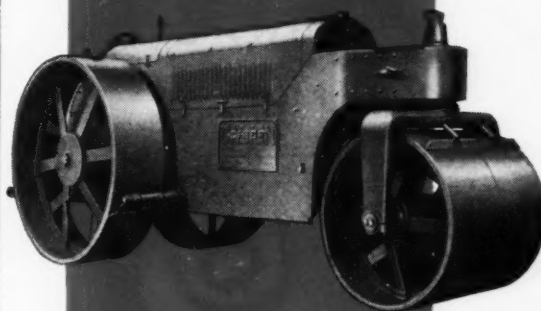
HYDRAULIC DOZERS—Built to fit the largest crawler tractors, straight and angle-blade Hydradozers feature a front-mounted, closed hydraulic system with pump, control valve and reservoir, in one unit. Moldboard has maximum tilt of 18 in. from horizontal, and angle of cut or pitch has a 10-deg. adjustment from normal. Large bearing surfaces on the two-way side-frame trunnions take up side-frame twist, hold moldboard tilt solidly, and minimize wear. Cylinders are mounted on a universal trunnion bracket.—**Pacific Car and Foundry Co., Renton, Wash.**

MASONRY WATERPROOFING—Brushed or sprayed on to a masonry surface, one application of Crystal waterproofing will eliminate the capillary action causing water to soak through a wall. Not a coating, Crystal penetrates the surface and does not stop "breathing" self-cleansing properties. Accelerated weather and aging tests show that Crystal does not deteriorate even 8 years after it has been applied. One gallon covers up to 200 sq.ft.—**Wurdack Chemical Co., 4987 Tyler Ave., St. Louis 9, Mo.**



FLEXIBLE STEEL FORM IMPROVEMENT—New development supports face forms by overhead hangers permitting concrete curb construction of any length without breaks or scoring of concrete. There is ample clearance beneath overhead hanger for hand finishing. Position of hangers on forms is adjustable to allow for obstacle interference.—**Heltzel Steel Form & Iron Co., Warren, Ohio.**

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PROFITS-
JOB
AFTER
JOB**



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with*

GALION

THREE-WHEEL

The roller that does an unrivaled job of compaction on fills and other primary rolling. 6-, 7-, 8-, 10- and 12-ton sizes.

TANDEM

Rolls out a top surface of superlative smoothness and density. Highly maneuverable for precision rolling. 3-, 4-, 5-, 8- and 10-ton sizes—variable from 3 tons up to 14 tons.

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Puts surface maintenance on an economical basis. Easy to haul from job to job—yet it does a thorough job of compaction. Weight 6700 lbs., variable up to 9367 lbs.

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TRIMO-ALLOY

THE ONLY ALL-ALLOY STEEL PIPE WRENCH

PART FOR PART AND SIZE
FOR SIZE, THE MOST
POWERFUL PIPE
WRENCH EVER BUILT
FOR INDUSTRY!

Here's the smoothest working, safest, most durable pipe wrench ever designed—hard in the right spots to bite, hold and stand wear—tough in the right places to take the severest stress in plant or field. Trimo—and only Trimo—has the extra strength of drop-forged alloy construction from end to end! Sold by leading distributors everywhere. Write for complete line catalog.

TRIMONT MANUFACTURING CO.

DIVISION OF AETNA INDUSTRIAL CORP.

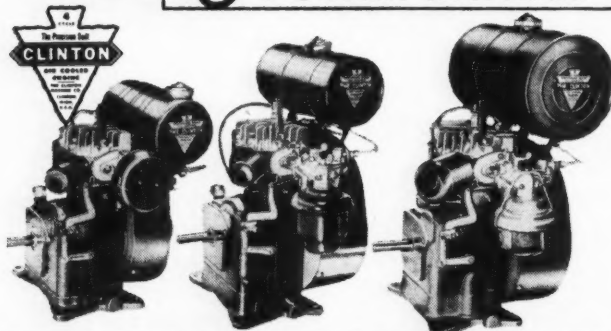
63 AMORY STREET, ROXBURY, BOSTON 19, MASS.

Pipe Wrenches • Chain Wrenches • Monkey Wrenches • Stillson Type Wrenches • Spud
General Utility Wrenches • Saunders, Barnes and Other Type Pipe Cutters • Pipe Vises,
Chain Vises • Saw Vises • Kit and Portable Vises

CLINTON ENGINES

Now

3 POWER RANGES



$\frac{3}{4}$ to 1.2 H.P. • $1\frac{1}{2}$ to 2 H.P. • $2\frac{1}{2}$ to 3 H.P.

4 CYCLE • AIR COOLED

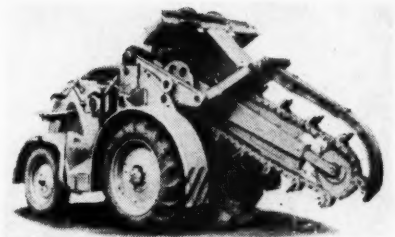
NOW—in addition to the famous CLINTON 700 Series and 1100 Series Engines—CLINTON offers the engine that so many wanted—the New 500 Series Engine— $\frac{3}{4}$ to 1.2 h.p.—there's nothing finer.

Use these sturdy, easy starting CLINTON engines for tractors, generators, grain augers, small boats, bicycles, mowers and other uses on and off the farm. CLINTON engines (sold world-wide—service anywhere) give peak performance at all times, under all conditions.

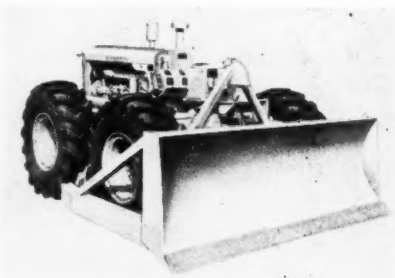
For full information write Dept. 100CM

It's Powered BEST When CLINTON Powered

CLINTON MACHINE CO.
CLINTON, MICHIGAN

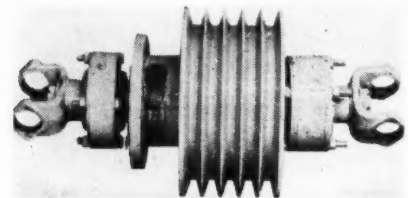


TRENCHMOBILE — Ladder-type trencher with a digging range of 5 to 7½ in. in width and up to 4 ft. in depth is now available. Rubber-tire mounted and self-propelled, compact excavator has operating and trenching speeds for all purposes.—Koehring Co., 3206 W. Concordia Ave., Milwaukee 10, Wis.



PUSHER AND BULLDOZER—

High-speed machine for dozer and pusher loading is 300-hp. unit on 24x29 ground grip tires with a top speed of 13.6 mph. both forward and reverse. Tournadozer has four forward or reverse speeds made possible by constant-mesh principle in transmission design. Electrically operated blade control is feature of 25-ton tractor dozer. Source of electrical current is a 240-v., 120 cycle a.c. generator built in line with the diesel engine. Height blade can be raised above ground is 3 ft. 10 in. Approximate shipping weight is 50,700 lb. Overall dimensions are: width, (blade mounted) 13 ft. 10 in.; length, 19 ft. 7 in.; wheelbase, 7 ft. 6 in.; gage, 8 ft. 10½ in. Machine is recommended as a pusher unit with large scrapers.—R. G. LeTourneau, Inc., Peoria, Ill.



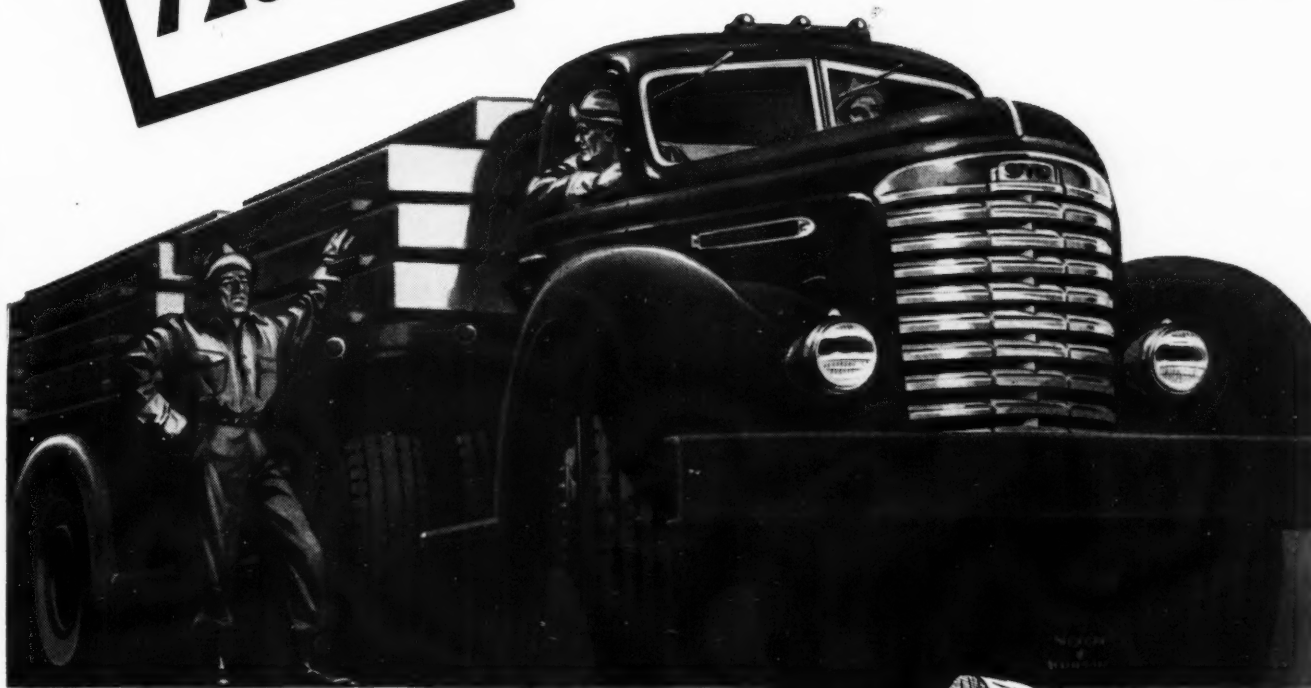
HEAVY DUTY POWER TAKE-OFF

—Guaranteed to transmit full engine power to the driving of heavy duty truck-mounted equipment, P-80 "packaged" power take-off is 16¼ in. long and weighs 125 lb. Unit is identical for all trucks, and individual-truck mounting parts are kept in stock.—Davey Compressor Co., Kent, Ohio.

GMC
SERIES
720 AND 800

Winning Numbers

FOR HEAVY HAULERS

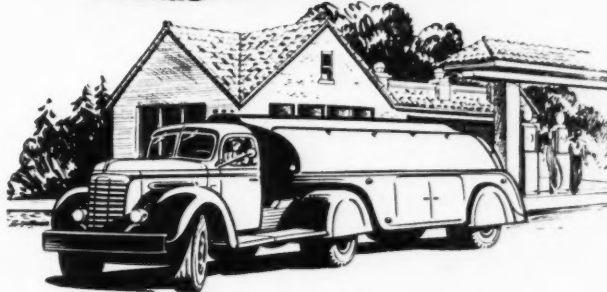
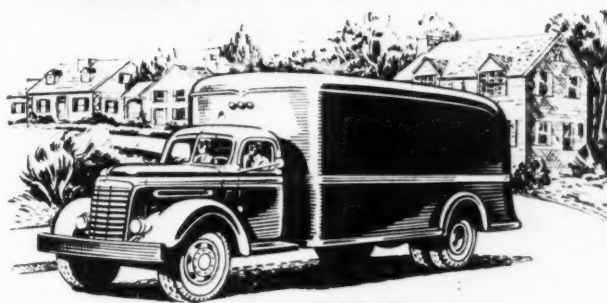


Here's good news for operators hauling heavy loads of milk, petroleum, machinery... logs and lumber... stone and ore... furniture and freight. Substantial production of GMC 720 series Specialized Tractors and 800 series straight truck models, assures quick delivery.

GMC 720 series tractors have gross combination weight ratings of 40,000 pounds... the 800 series trucks have gross vehicle weight ratings of 30,000 pounds. Both are offered in wheelbases of 136 to 196 inches, with cab-axle dimensions of 60 to 120 inches. Both have big 426 cu. in. engines of the same basic design as the war famous "Army Workhorse." Both have many other features specific to the jobs for which they are built.

If you need a new truck in either classification, put your money on one of these all-truck, heavy duty GMCs.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION



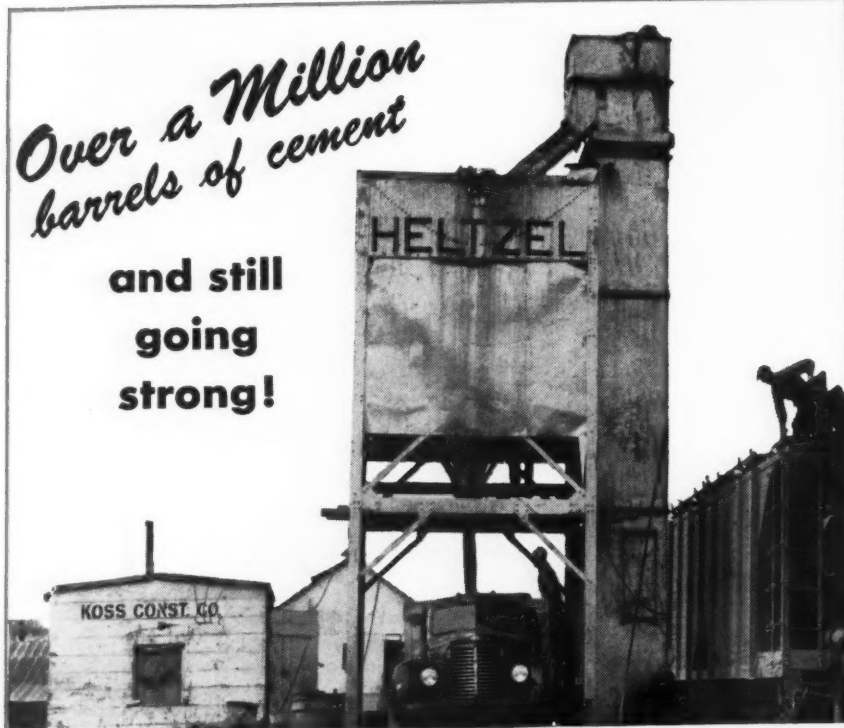
GMC
TRUCKS

THE TRUCK
OF VALUE

GASOLINE
• DIESEL

*Over a Million
barrels of cement*

**and still
going
strong!**



**VETERAN HELTZEL PLANT HAS REPAID
ITS COST 42 TIMES OVER IN 17 YEARS . . .**

- 1,160,500 barrels of cement have been unloaded by this plant. In 1931, time studies indicated the plant cost would be repaid at the handling of 25,000 to 30,000 barrels. (Note comments by Mr. Koss in the following letter.)

KOSS CONSTRUCTION CO.
General Contractors Since 1914
April 21, 1948

Mr. Donald T. Heltzel
Heltzel Steel Form and Iron Co.
Warren, Ohio

Dear Sir:

Our records indicate this bin was purchased by us in 1931. It has been used by us on paving projects all over the middle-west from that time until the present and is still a good plant and doing a fine job. During this period, we have unloaded 1,160,500 barrels of cement with the Heltzel, including box cars, hopper bottoms and truck delivery. You can be justifiably proud of the performance of this equipment.

Yours very truly,

Richard B. Koss
Richard B. Koss
Vice President

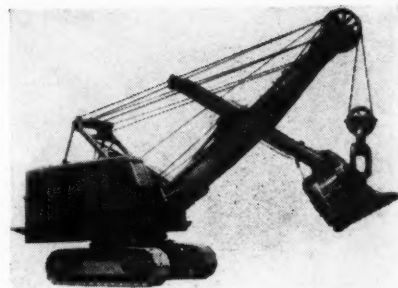
RBK:2

Heltzel plants are products of specialized engineering, and constructed for lasting, trouble-free service. Your requirements for plants will be served best by Heltzel. Write for information and literature.



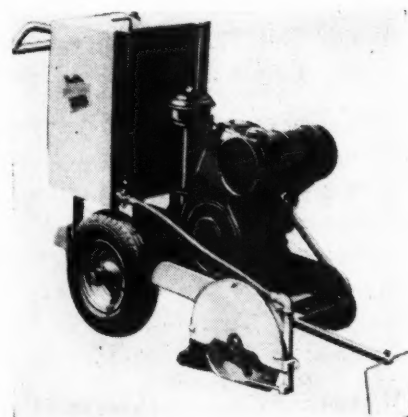
CONCRETE BUCKETS

HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO · U. S. A.



POWER SHOVEL—Quick convertibility extends operating advantages of a 2½-yd. excavator to dragline, crane and clamshell work. Features are a two-section independent, chain crowd, self-equalizing 37-in. retract clutch, 3-ft. 9-in. boom-point sheaves, non-torsional shipper shaft, boom foot shock absorbers and a ratchet and pawl dipper trip. Diesel-powered, the 1005 model supports the 19½-ft. double dipper sticks at the deep midsection of a rigid 26-ft. box-section boom. With a 60-ft. boom, crane lifting capacity is listed at 101,000 lb. Crawler shoes can be replaced with 36- or 42-in. shoes, and 10- and 20-ft. boom extensions are provided.—**Koehring Co., 3026 W. Concordia Ave., Milwaukee 10, Wis.**

BLUEPRINT CABINET—Drawings and blueprints hang smoothly, occupy a minimum of space, are indexed and quickly accessible in the Draw-In-Dex cabinet. Accommodating up to 1,000 drawings, the cabinet is 4 ft. high, 2 ft. 6 in. wide, and 20 in. deep. Index cards and lock are standard equipment.—**Empire Development Corp., 52 Broadway, New York 4, N. Y.**



CONCRETE CUTTER—Cutting speeds up to 60 in. per min., cuts 1 to 3 in. deep, sharp, straight edges and 90-deg. angle corners are possible with the Stratedge Concrete Cutter. Cutter is equipped with a 6-hp. engine and specially-designed diamond saw. It is easily transported and operated by one man.—**Backlin Products Corp., Burlington, Wis.**

a thousand and one

job-proved wire ropes

There's a Macwhyte rope
that's the right rope
for your equipment



Use PREformed Whyte Strand for easy
handling and longer service.

Macwhyte Distributors and Mill Depots — carry
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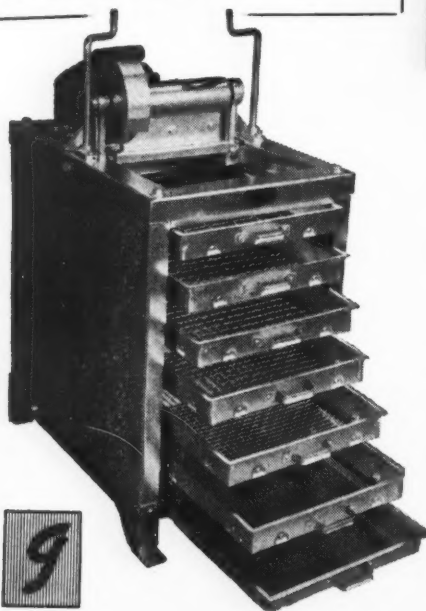
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8 GILSON FEATURES

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh



GILSON Mechanical Testing Screen

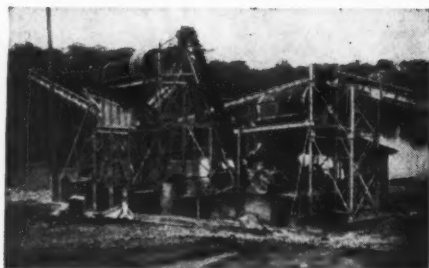
• This machine is designed for the efficient sizing of test samples of crushed stone, gravel, slag and similar materials. It accommodates samples up to one cubic foot, making from two to seven separations simultaneously, in five minutes or less.

Smaller amounts of very fine materials may be handled efficiently and the screen used for research or other special mass separation jobs down to 100-mesh or finer.

Where exacting specifications are required the Gilson Screen eliminates guesswork—avoids errors and reduces operating delays. A controlled and truly guaranteed product is now possible with the Gilson Testing Screen. For fast accurate sizing of coarse or fines from 4" to 200-mesh specify a Gilson Testing Screen.

GILSON SCREEN CO. BOX 186
MERCER, PENNA.

Crush Your Own Rock Reliance EQUIPS your JOBS



RELiance PRODUCTS

Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand & Gravel Spreaders, Wash Boxes.

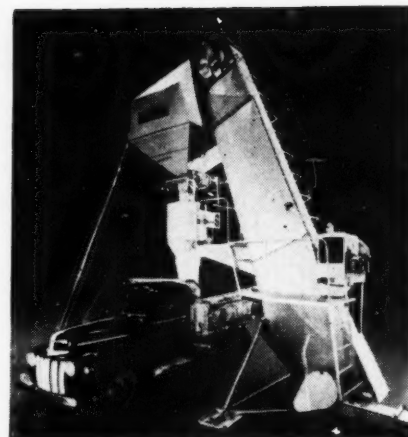
Rather than face the delay and expense of rail or highway shipments of crushed stone, gravel and sand, install your own plant and save both time and money.

We'll gladly refer you to contrac-

tors who are making money and rushing their work with RELIANCE Equipment.

Write for the latest RELIANCE
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UNIVERSAL ROAD MACHINERY CO.
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DISTRIBUTORS IN ALL PRINCIPAL CITIES OF U. S. A.



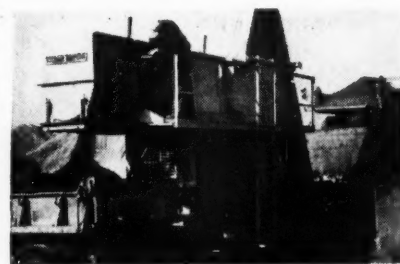
ELEVATING CEMENT CHARGER

—Used as a portable plant for unloading cement from boxcars or hopper-bottom cars, an elevating cement charger can be moved and set up without auxiliary equipment. A standard dump truck transports and is employed in erecting the one-piece unit. Standard equipment includes gasoline engine or electric drive, a 1000-lb. capacity weigh batcher, boxcar receiving hopper, a 10-in.-dia. adjustable height screw conveyor and a small air compressor for cement aeration. Capacity is 300 bbl. per hr. with buckets 80 percent filled.

—C. S. Johnson Co., Champaign, Ill.

WOOD PIPE PRESERVATIVE—

Pentachlorophenol protects wooden and wood-lined pipes against decay and insect attack. The preservative is non-volatile, insoluble in water, and can be mixed with inexpensive light oils to make it practically colorless and permit painting after the wood has been treated.—Dow Chemical Co., Midland, Mich.



BITUMINOUS MIXING PLANT—

Portable, continuous volumetric-type bituminous mixing plant, with a 100-to 150-ton-per-hr. capacity, is built in two units on pneumatic-tired steel trucks, but can be set up permanently, if desired. Steady flow of accurately mixed bituminous materials is assured by separate gradation and mixing units. Where specifications are not so complex, mixing unit may be used alone.—Iowa Mfg. Co., Cedar Rapids, Iowa.

Steam

WHERE AND WHEN YOU NEED IT



EXPRESSLY DESIGNED FOR
CONSTRUCTION OPERATIONS

NEW • PORTABLE • PACKAGED

**CLEAVER-BROOKS
STEAM GENERATORS**

80 H.P. — 125 H.P. — 150 P.S.I.

Here's what you have been looking for — completely packaged units — portable — and suitable for a wide range of construction work such as — asphalt plant, storage and tank car heating, aggregate heating, ready or hot mix plants, pile driving, and winter concrete work for both hot water and steam for curing.

Available in 80 HP and 125 HP — 150 PSI. (For permanent installation a capacity range of 15 to 500 HP is available in other Cleaver-Brooks packaged steam generators.) Clean, smokeless and require no ash disposal. Provide the easiest fuel handling. Complete safety protection — a four-pass boiler designed in accordance with A.S.M.E. code; inspected and approved by Hartford Steam Boiler Inspection and Insurance Company.

Send today for illustrated catalog
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PACKAGED GENERATOR

TANK CAR HEATERS • BITUMINOUS BOOSTERS

- Fast Steaming
- 80% Efficiency
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- Choice of Gas or Electric Motor

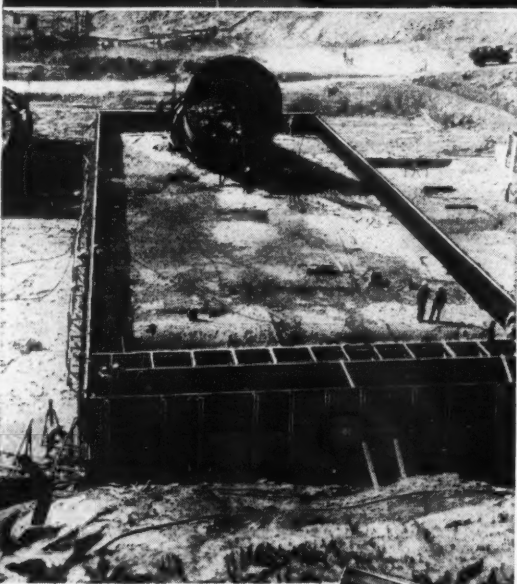
BLAW-KNOX

applies its STEEL FORM "Know How"
TO CONCRETE GRAVITY DAMS

Blaw-Knox has proved the practicability of its forming method for pouring concrete monoliths of gravity type dams—a design of steel form which is easily handled through successive lifts—and which can easily be aligned for all job conditions.

It would be our pleasure to tell you about this tried and proved system of BLAW-KNOX STEEL FORMS for concrete monoliths. You will incur no obligation by asking for this information.

This accurate alignment is quickly achieved by mechanized adjustment.



Blaw-Knox STEEL FORMS have been serving engineers and contractors for over 40 years. The Blaw-Knox record of accomplishment is shown in Catalog 1836. Send for a copy.

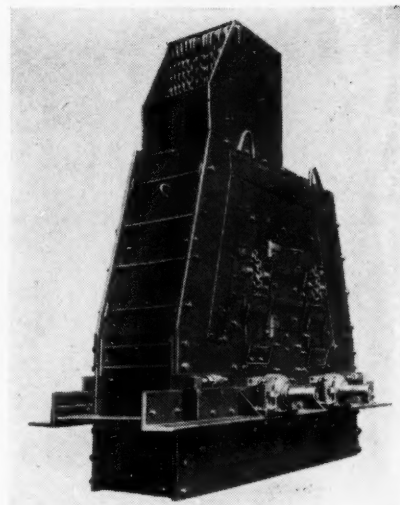


BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY

2086 Farmers Bank Bldg., Pittsburgh 22, Pa.

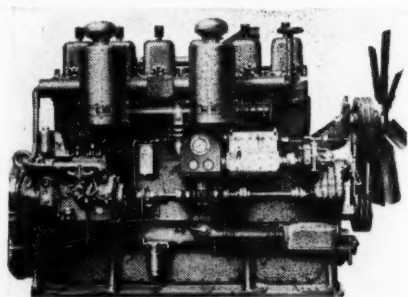
Birmingham • Chicago • New York • Philadelphia • Washington

BLAW-KNOX
has the
STEEL FORM
"Know How"

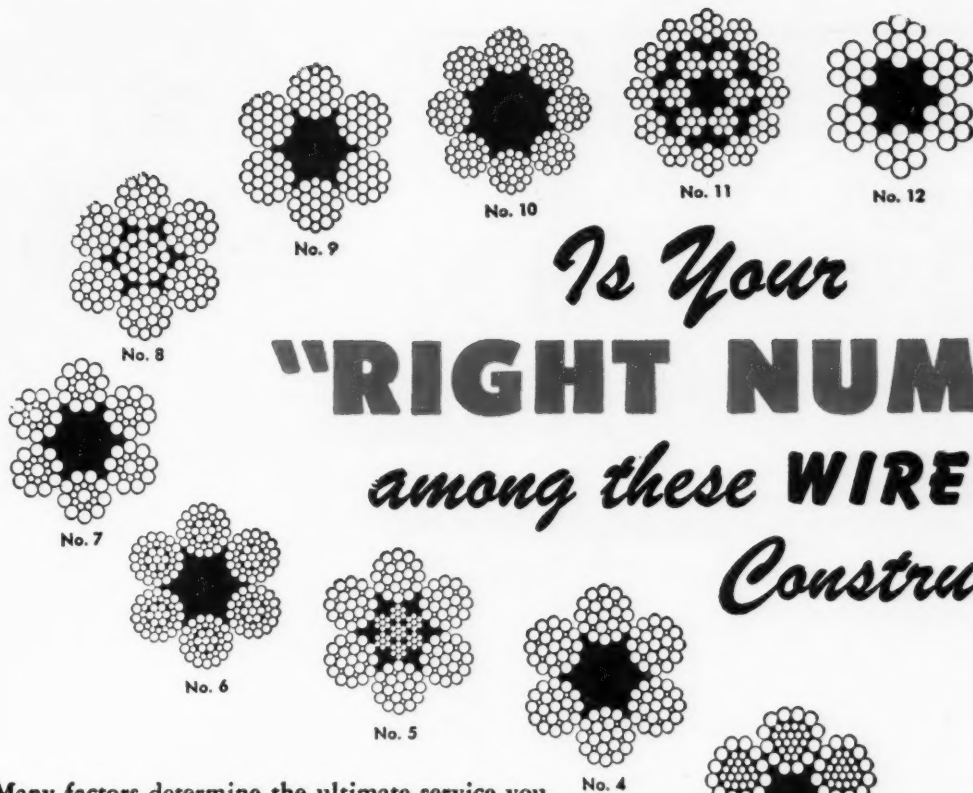


DOUBLE IMPELLER BREAKER—

The 20,000-lb. model 2020 Breaker will produce cubical crushed aggregate from any material not exceeding 20x20x36 in. Two 2,930-lb. impellers spin in opposite directions, keeping the machine stable. Each impeller is equipped with three 265-lb. manganese steel bars, and alloy steel shafts have a 4 1/16-in. dia. at the core and 3 7/16-in. at the bearings. With a 50- to 135-ton-per-hr. capacity, the 2020 operates on 50 to 100 hp.—New Holland Machine Co., New Holland, Pa.



DIESEL ENGINE — Adaptable to drilling, power generation, and many other tasks, the 6-LRD diesel engine is rated as a power unit at 281 hp. at 900 rpm. Maximum output is 301 hp. at 1,050 rpm. Engine is 8 1/2 x 8 1/2-in. bore and stroke, six cylinders, with a 2,894-in. displacement. A seven-bearing 5 1/2-in. graphitic steel crankshaft is heat-treated and hardened to give crank pin and main journal hardness of 75-90 scleroscopic index. Alloy cylinders test 400 Brinell. Piston crowns are cooled by intermittent circulation of oil under pressure from the lubricating system. Engine as a power unit is equipped with waste-packed oil filters, fuel filters, built-in governor, injection system and, if so desired, a mechanical gasoline engine starting system. Accessories of all types are available.—Waukesha Motor Co., Waukesha, Wis.



Is Your "RIGHT NUMBER" among these WIRE ROPE Constructions?

Many factors determine the ultimate service you may expect from a Wire Rope. Among these are size, grade, construction and quality. But equally important is selecting the correct combination of these and other vital factors. Unless a rope fits the particular job to be done, the best results will not be had.

As "HERCULES" (Red Strand) Wire Rope is made in a wide range of both Round Strand and Flattened Strand constructions—Preformed and Non-Preformed—it offers the 'right number' for *any* heavy duty job.

And our Engineering Department is always ready to help you select the rope that will give you the most service for each dollar of its cost. Call on us anytime.

- No. 1—Style B Flattened Strand—Hemp Center
- No. 2—6 x 41 Round Strand—Metallic Core
- No. 3—Style G Flattened Strand—Hemp Center
- No. 4—6 x 19 Filler Wire Round Strand—Hemp Center
- No. 5—6 x 19 Filler Wire Round Strand—Wire Rope Center
- No. 6—6 x 37 Round Strand—Hemp Center
- No. 7—6 x 19 Seale Round Strand—Hemp Center
- No. 8—6 x 19 Round Strand—Metallic Core
- No. 9—6 x 19 Warrington Round Strand—Hemp Center
- No. 10—8 x 19 Filler Wire Round Strand—Hemp Center
- No. 11—18 x 7 Non-Rotating
- No. 12—6 x 7 Round Strand Haulage Rope—Hemp Center.

All of these constructions are available either Preformed or Non-Preformed.

Use
PREFORMED
for
Easier Handling
and
Smoother Spooling



Use
PREFORMED
for
Longer Life
and
Greater Economy

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.

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NEW YORK 6
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HOUSTON 3
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IT'S DIFFERENT!

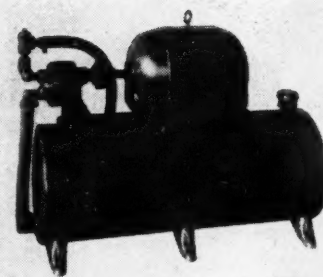


it's a SWING Loader

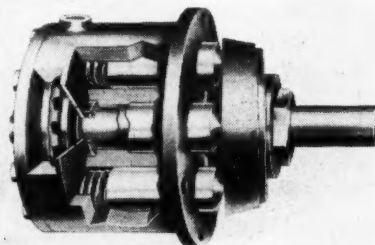
Plenty of "crowd" power—raises load easily, and swings to dumping position. No jockeying of tractor or truck. Saves Time!

Mounts on International Tractors—Sold Through International Dealers (or write to Dept. CM-9).

SUPERIOR EQUIPMENT COMPANY
BUCYRUS, OHIO



LOW COST POWER UNITS—Selling in the low price bracket, the "Cubline" power units open up broader fields for hydraulics application. Each of the 6-, 10-, and 15-gpm. units consists of a 35 gal. round oil storage reservoir with foot mountings; electric motor; 1,000 psi. gear pump, relief valve; coupling; pipe and fittings; suction hose and clamps. —Hydraulic Press Mfg. Co., Hydro-Power Division, Mt. Gilead, Ohio.



HYDRAULIC PUMP—With a rotating plate for reciprocating the pistons without any side thrust a piston type hydraulic pump with rotary valve operates in either direction with one adjustment. Rotary valve is full floating and hydraulically balanced. Dudley Pump is manufactured in all capacities commonly used for hydraulic systems.—Cannon & Co., 2320 E. 8th St., Los Angeles 21, Calif.



New!

STOPS MOISTURE FROM FALLING
INTO TRACTOR EXHAUST

No.	O.D. Exhaust	Retail
1	2 1/2"	\$1.90
2	2 1/2"	1.90
3	2 1/2"	1.90
5	1 7/8"	1.90
55	2"	1.90
5x	1 1/2"	1.90
6	1 1/2"	1.90
64	1 1/2"	1.90
7	2 1/4"	1.90
8	3"	2.50
9	3 1/4"	2.50
10	3 1/4"	2.50
11	3 1/4"	2.75
115	3 1/2"	3.00
17	1"	3.00
121	4 1/4"	3.00
125	4 1/4"	3.00
14	4 1/4"	3.00

THE CAP THAT DOES NOT FORGET TO CLOSE
Completely automatic—the "RAIN-CAP" is counterbalanced to open when the tractor starts and close when it stops. Rust proof—made of cast aluminum—with bronze bushing—can be installed in two minutes. F.O.B. Waterloo, Iowa.

- Immediate delivery
- Liberal Dealer Discount.



Write Dept. CM.

WATERLOO FOUNDRY CO., WATERLOO, IOWA



TWIN HOIST PICKUP DUMP—Controlled by a finger-tip lever in the cab, a fully automatic, hydraulically operated, twin hoist dump body can be installed on nearly all makes and models of 3/4- and 1-ton pickup trucks. Twin hoist unit has a rated lifting capacity of 3 tons with a wide overload safety factor. Single hoist unit for 1/2-ton pickups has a rated 1-ton capacity.—National Truck Equipment Co., Dept. 441, Waukesha, Wis.

Lima PAYMASTER with clam-shell bucket backfilling around foundation.

LIMA

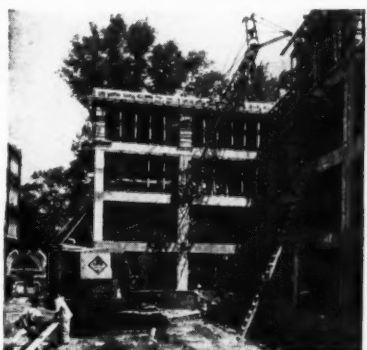
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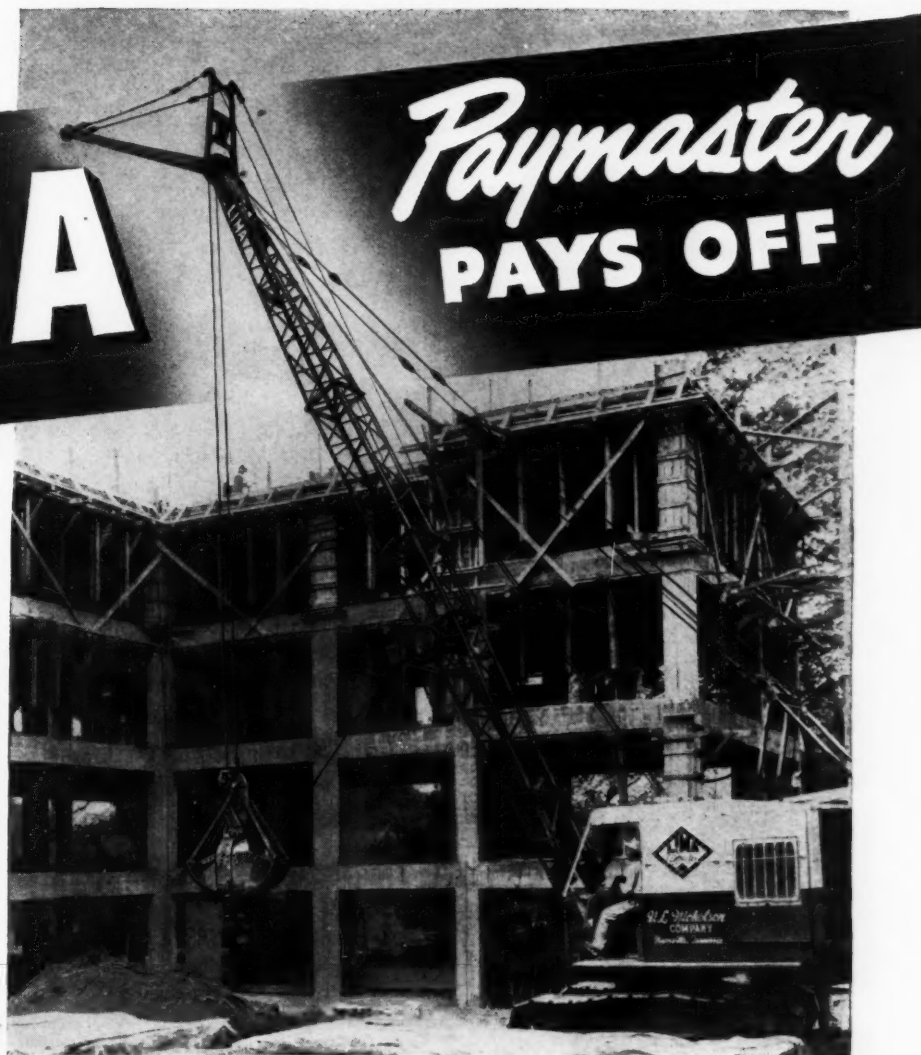
Lima PAYMASTER with crane pulling stumps to clear site.



Lima PAYMASTER with 50' boom and 15' jib pouring basement concrete.



Lima PAYMASTER placing cement for upper floors and roof.



because it STAYS ON THE JOB from start to finish!

● Versatility and Stamina of the LIMA PAYMASTER— $\frac{3}{4}$ yard convertible shovel, crane and dragline—were demonstrated on the University of Tennessee dormitory project at Knoxville. First, equipped as crane, it cleared the site of stumps. Next, with shovel boom and dipper, it dug the basement. Then the crane, with $\frac{3}{4}$ yard bucket, poured cement for basement and sills, and placed concrete for the upper structure. A shorter boom handled brick, hollow tile and other material for each floor.

The PAYMASTER paid off by saving time and labor on every operation. It saved lumber by eliminating runways for concrete buggies and chutes or spouts for placing concrete—thus avoiding methods which cause separation of aggregate, and because the PAYMASTER stayed on the job from start to finish, there was no delay in the construction.

Let Lima show you how to cut excavating and handling costs. Write for Bulletin 034D.

See us at the Road Show

Lima Shovel and Crane Division

LIMA, OHIO

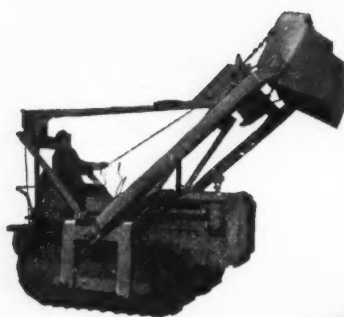
OTHER DIVISIONS: Lima Locomotive Works Division, Niles Tool Works Co., Harnett, Ontario, Rentschler Co.

**LIMA
HAMILTON
CORPORATION**

BULLDOZERS & TRAILBUILDERS



LOADERS



RIPPERS

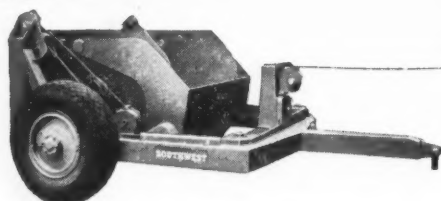


TAMPERS

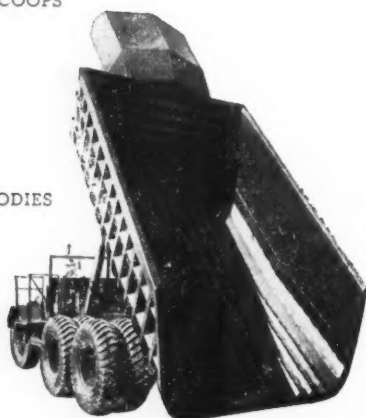


SOUTHWEST Construction Equipment *for every job!*

HAULING SCOOPS



DUMP BODIES



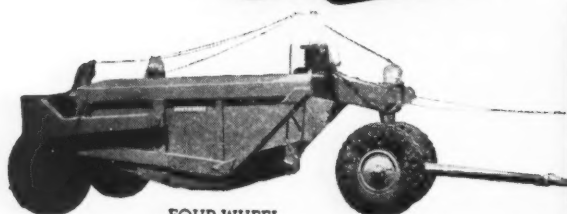
Southwest's complete, standardized line affords construction men an opportunity to fill their needs from one dependable source. From start to finish, no matter whether Allis-Chalmers, Caterpillar, International or Cletrac tractors are used, an economical Southwest unit is available to bring you increased profits.

In addition to the standard line, special Southwest Dump Wagons, Tampers, Heavy Duty Compaction Units, etc., are giving outstanding performance on out-of-the-ordinary jobs all over the country . . . Why not let Southwest help solve YOUR problems?

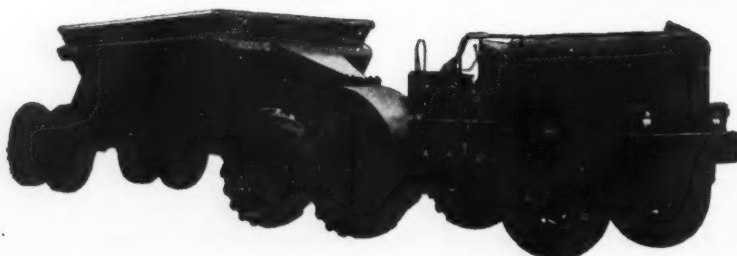
POWER CONTROL
UNITS



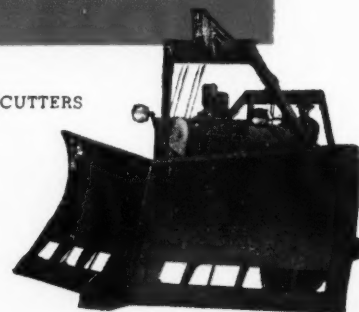
FOUR WHEEL
SCRAPERS



BOTTOM DUMP WAGONS



BRUSHCUTTERS



CONSTRUCTION MACHINERY DIVISION

**Southwest Welding &
Manufacturing Company**

ALHAMBRA, CALIFORNIA

are you being taken for a buggy ride?

Is the high cost of materials and labor clouding
your profit picture . . . endangering your customer relations?

To cost-conscious contractors and engineers, Rex Pumpcrete . . .
the pump that pumps concrete through a pipe line . . . provides a proved way to
substantially reduce costs!

For example! Think of the costs involved in bugging concrete!
Figure the savings to be gained when you can eliminate the buggy run and
deliver concrete through a pipe line right to the point of replacement.

Then! Figure how much you could cut your bids if you could be assured
the fastest, most advantageous form and steel setting sequence . . . if you
could achieve a closer coordination between the trades (carpenters, steel setters,
concrete crews) and reduce interference with these interlocking activities.

Because Pumpcrete makes these advantages possible through
steady pumping instead of the usual occasional pour, you can cut days off your
schedule . . . and that means money in your pocket!

Add to these cost-cutting advantages, the fact that Pumpcrete transports
concrete through a pipe line on one or more levels . . . elevates or
lowers and distributes concrete in ONE operation. Thus, you can
eliminate the expense of road building and maintenance . . . trestling and scaffolding
. . . towers and many other items of preparatory work that add materially
to construction costs.

If you want to avoid being taken for a "buggy ride,"
talk to your Rex Distributor before you bid. He can show you how
you can cut costs . . . improve concrete quality . . . make more money with
"concrete by pipe line." If you prefer, write direct for free copies of
informative Bulletins on Pumpcrete economy. Address Chain Belt
Company, 1664 West Bruce Street, Milwaukee 4, Wis.

**REMEMBER, Pumpcrete can now be rented from your Rex
Distributor so you can prove the economy of pipe line
placement for yourself at low cost!**

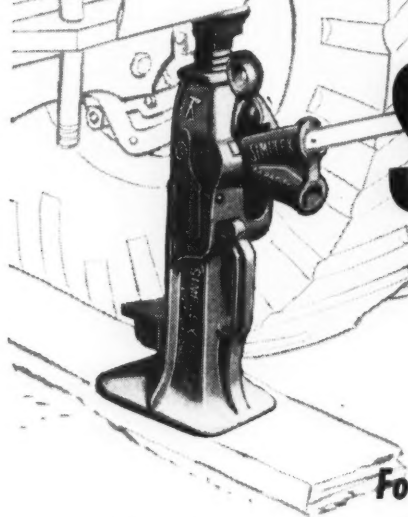
REX

CONSTRUCTION MACHINERY

For Faster LIFTING For Safer LOWERING

SIMPLEX

RATCHET LOWERING JACKS



NO. 22
10-TON CAP.

*For Contractors, Bridge and
Road Builders, Truckers,
Operators of Heavy Equipment*

Use these single acting jacks for safe, sure work in lifting, lowering, pushing or pulling. Double lever sockets speed work in cramped quarters and in angular lifting. All models will lift full capacity on the toe or on the cap — a feature that only Simplex can give you.

Best materials are used throughout for rugged, long-life operation, by the manufacturer awarded the only gold medal for the safety of jacks by the American Museum of Safety.

Available in 10 models with capacities ranging from 5 to 20 tons, and lift from 7 to 18 inches. All have two-way standard lever socket except three largest models; these are available with any of three types of sockets. Delivered with lever included.

For full information, write for Bulletin: Industrial 48.

SIMPLEX HYDRAULIC JACKS



For heavy duty work in shops and factories, in construction and transportation. Powerful hydraulic operation. Available in eight models to handle from 3 to 100 tons — tested to 100% overload. Write for Bulletin HJ-47

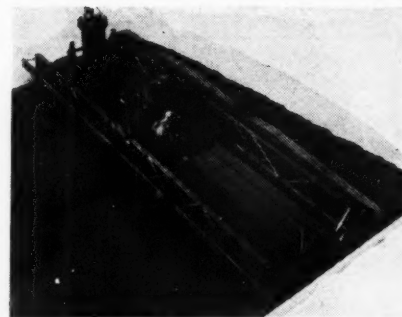
Simplex

LEVER - SCREW - HYDRAULIC

Jacks

TEMPLETON, KENLY & COMPANY

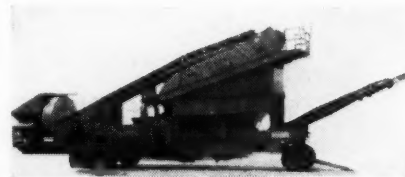
1008 South Central Avenue • Chicago 44, Illinois



HIGHWAY COMBINATION MACHINE—Automatic spray curing, brooming, belting, burlap dragging, and traffic line installation are accomplished, any three at a time, by a combination machine. Easily interchangeable, attachments are installed on the basic automatic spray machine. Combination machine is available in standard widths, 10-12½ ft. and 20-25 ft., and in special widths on request.—**Flex-Plane Co.**, Warren, Ohio.



ONE-MAN HOIST—A 6-lb. one-man hoist with a ¾-ton capacity eliminates heavy chain hoists in most cases. Pow'r Pull is available with various cable lengths. — **American Gage & Manufacturing Co.**, 125 Bayard St., Dayton 1, Ohio.



SECONDARY STONE PLANT—Designed for agricultural lime-dust and road-rock production, the model 1800 secondary stone plant consists of a Universal Hammermill on a truck with a double-deck vibrating screen, Rotovator, conveyors, hoppers, and necessary drives. Material from a primary crusher goes directly to the screen, and oversize is delivered to the Hammermill. The model 1800 is available with three Hammermill sizes with agg.-lime capacities from 20-75 tons per hr. and road stone from 50-125 tons per hr.—**Universal Engineering Corp.**, Cedar Rapids, Iowa.

BUTLER BIN COMPANY

WAUKESHA, WISCONSIN

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Complete BUTLER ENGINEERED DESIGN

Covering a detailed study by BUTLER ENGINEERS of adaptation of terrain at your plant location, transportation facilities, economy and top efficiency in materials handling and flow to meet maximum production demands with a minimum of time and man-power.....

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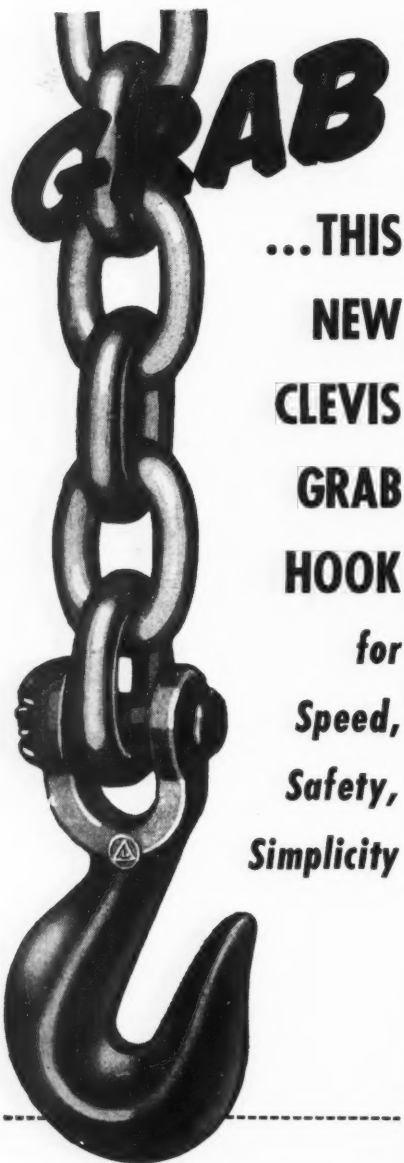
We, the undersigned, do hereby
guarantee that the
goods listed herein were produced
in accordance with the Fair Labor
Practice Act of October 24, 1938.

Guarantee that the
or manufactured in
Standards Act of
BUTLER BIN
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NOTICE:

Your check or settlement must
be paid to the BUTLER BIN
COMPANY. Pay no money

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CLEVIS
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HOOK
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Speed,
Safety,
Simplicity**

Here's a new one—a rugged, heat-treated, forged hook with a jaw that's quickly attached to any chain.

**Slip the pin through the clevis;
Spread the cotter**

...and you've made a better, stronger connection in nothing flat. Supersafe, too—forged housing protects workers from projecting cotter pin.

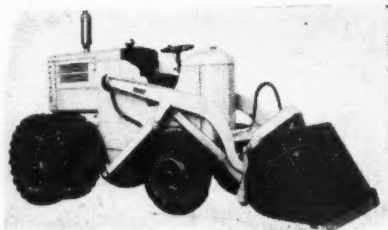
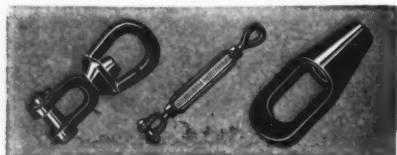
Laughlin Clevis Grab Hooks do away with shackling... cold-shutting... cutting, bending and rewelding the chain. Easily changed from job to job.

Send for information... and Laughlin's data book of industrial fittings — Catalog #140. THE THOMAS LAUGHLIN COMPANY, DEPT. 1, PORTLAND 6, MAINE.

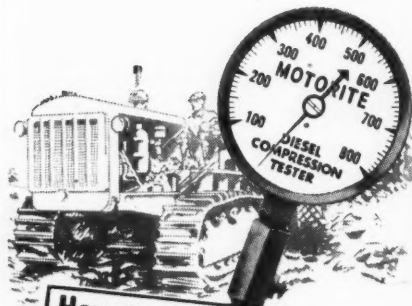
LAUGHLIN



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JEEP HYDRAULIC SCOOP—Speeding ditching and ditch cleaning, a 6-ft. capacity hydraulically controlled steel scoop can be attached to any jeep equipped with the Monroe hydraulic lift. Constructed with a heavy welded steel frame and reinforced forged cutting blade, the scoop can be attached or removed from the three-point hitch by one man in a few minutes. The lift provides an adjustable down pressure of 1 to 500 lb. Pitch is controlled by the top link, and angle of cut is regulated by lifting arm adjusting screws. Scoop is dumped by a release rope at the driver's seat and returns automatically to reloading position.—Newgren Co., 730 Phillips Ave., Toledo 12, Ohio.



How to Stop DIESEL TROUBLES Before They Start

The compression-ignition principle of Diesel engines makes regular checks of compression of all cylinders vitally important. Maintaining correct compression pays off. It means keeping correct Diesels running at peak efficiency. The result is lower maintenance costs, longer engine life, and greater operating efficiency.

The MOTORITE Diesel Compression Tester simplifies checking compression pressure. It is easily attachable to any make of Diesel by means of an interchangeable adapter which takes place of an fuel injector. In addition to a "universal" adapter which serves more than 50 makes and types of Diesels, we have a complete line of special adapters for practically every commonly-used Diesel.

For full particulars write for Leaflet 605.



ATTENTION Distributors: Diesel equipment and accessory jobbers are invited to write for information about attractive distribution proposition.

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Balance*

*Equipped
with
SHOCK
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MADE
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SOLID BAR
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Since
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Take the DEAD END STREETS Out of Your Thoroughfares

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Air power costs you less money when you make it with any of the 7 sizes of Airmasters. You get your jobs done faster, too. Here's why:

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Tireless dependability — Airmasters — with their sturdy unit construction, extra-heavy balanced crankshafts, cushioned valves, pressure lubrication — keep plugging away. Down-time is less. Job schedules are completed sooner. Larger profits go into your pocket.

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This efficiency saves you both time and money. But you can get still more out of your Airmasters by teaming them with Le Roi-Cleveland Air Tools. Le Roi Paving Breakers, for example, hit hard, yet they are easy-holding. Our hand-held drills, the 30-lb. H-66, the 45-lb. H-10, and the 55-lb. H-111, have the holding, the drilling speed, and rotation that produce more feet per shift. For holes from 20 to 40 feet in depth, your best bet is the Le Roi-Cleveland wagon drill.

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with **Sonotubes**
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Laminated
fibre tubing

SONOTUBES are light, easy to handle—cut right on the job to desired lengths.

Minimum bracing necessary—just set up, align and pour! SONOTUBES can be left on or easily stripped off after concrete hardens.

Sonotube Construction
for one-time use

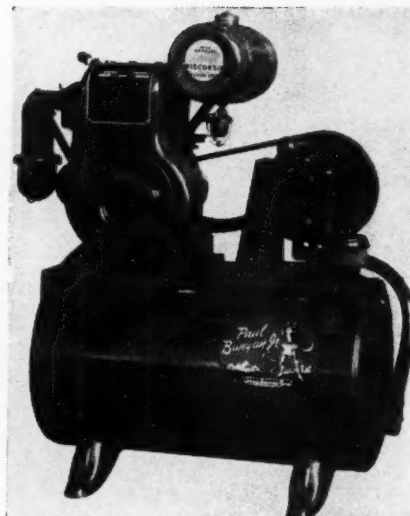
FAST EFFICIENT
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6 Standard Sizes Immediate Delivery
Lengths up to 24 feet

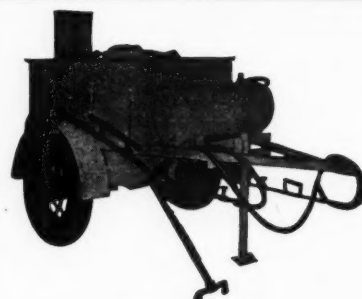
INSIDE DIAMETER					
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HYDRAULIC POWER UNIT—
Equipped with an air-cooled gasoline engine, the Paul Bunyan, Jr. unit puts hydraulic power into the portable class. The 16x28x36-in. unit can supply 3 gal. of oil per min. at 1,000 psi. Gear pump is mounted integrally with the operating valve, which has a ball-handle lever operated at forward, neutral and reverse positions. Only two operating line connections need be made to prepare unit for service.—Hydraulic Press Mfg. Co., Hydro-Power Division, Mt. Gilead, Ohio.



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Portable — Stationary

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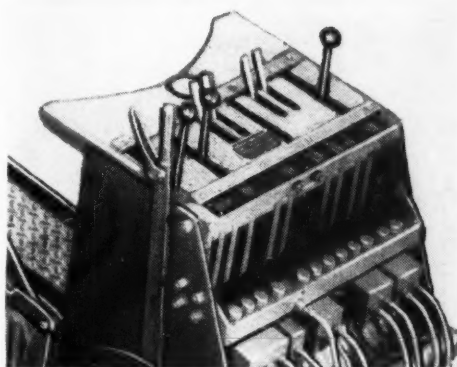
White Mfg. Co.

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**--- K-580
EASIER TO HANDLE
CRAWLS AND TURNS BETTER**



SPEED-O-MATIC CONTROL

"Speed-O-Matic" hydraulic control permanently eliminates all "lost motion"—actuates clutches faster and more smoothly. Operators will tell you the "Speed-O-Matic" control relieves manual effort and there is little or no fatigue after a good day's work. Get the facts today—find out how you, too, can greatly increase your output.

MORE SPEED for more profitable operation

This Link-Belt Speeder K-580 is working a double shift for Livingston Truck and Materials Company, Long Beach, Calif. The operator, Homer W. Bailey has this to say, "I have never operated a machine that handles so easily or crawls and turns better—the Link-Belt Speeder "Speed-O-Matic" leaves me fresh after a long day's work."

Maintenance cost records and daily work charts kept on the job readily prove these facts. Owners and operators, from coast to coast and border to border, attest to the outstanding performance records piled up by Link-Belt Speeder Shovel-Cranes.

Link-Belt Speeder engineering skill results in precision-built machines famous for trouble-free operation and long-life service.

\$1,195

LINK-BELT SPEEDER





VIBER PAVING VIBRATORS FULFILL ALL REQUIREMENTS FOR CORRECT CONCRETE SLAB VIBRATION!

1. FULL WIDTH... internal vibration produces uniform density from side form to side form.

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VIBER PAVING VIBRATOR... a single pass operation... a requirement for fast, economical pavement construction.

Write today for further information on the Viber method of concrete pavement vibration.



EST. 1931

CONCRETE VIBRATORS

726 South Flower Street, Burbank, California

WISCONSIN Air-Cooled ENGINES.. STOLE THE ROAD SHOW

If you were there, you will recall that you saw WISCONSIN ENGINES wherever you turned... as standard power units on the machines of no less than 51 different construction equipment exhibitors, for a total of 185 engines on display (not including our own exhibit.)

No greater tribute could be paid to Wisconsin Air-Cooled Engines than this outstanding visual demonstration of "popular acceptance" by leading manufacturers of all types of heavy-duty motorized equipment. Where dependability and "Most H. P. Hours" of on-the-job service count, the preference is definitely and dominantly for Wisconsin Air-Cooled Engines.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy Duty Air-Cooled Engines

MILWAUKEE 14 WISCONSIN

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

WATERPROOF BAGS—(12-p. booklet) Describes jobs that can be done with waterproof laminated textile bags. Bags are made of one or more layers of creped kraft paper laminated to cotton or burlap cloth. Booklet illustrates variety of bag-closing methods.—**Bemis Bro. Bag Co.**, 408 Pine St., St. Louis 2, Mo.

WALL FORM TIES—(8-p. pamphlet) Covers Twisties, clamps, threaded tierods, cone-nut assemblies, wrenches and rod pullers. This publication supercedes previous price lists.—**Universal Form Clamp Co.**, 1238 No. Kostner Ave., Chicago 51, Ill.

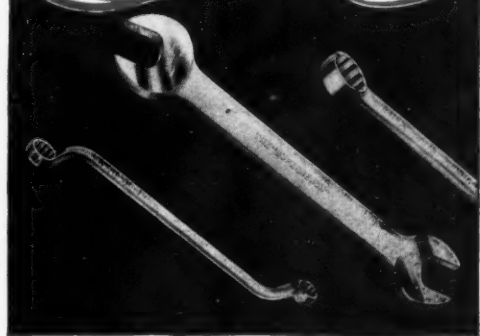
MANGANESE STEEL CHAIN—(28-p. bulletin) Factual data show advantages and ultimate economy of manganese steel chain for tough jobs involving shock and abrasion. Manganese steel sprocket wheels and elevator buckets also are treated in Bulletin 742-CN.—**American Manganese Steel Division, American Brake Shoe Co.**, Chicago Heights, Ill.

CURB AND GUTTER PAVER—A circular pictures and describes a self-powered curb and gutter paving machine which lays a minimum of 5 lin. ft. per min. It has a rapid eccentric tamping and strike off action before the screed and finishing trowel. It uses any standard concrete mixture graded from 1 1/4 in. down with lower slump for hand finishing.—**Dotmar Industries, Inc.**, Kalamazoo, Mich.

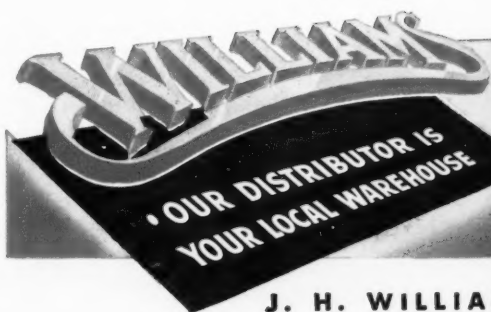
DIESEL ENGINE TEXTBOOK—A great deal of general information about diesel engines is contained in a 28-p. booklet. Among matters discussed are: Diesel power, engine construction, how combustion chamber functions, functional charts and diagrams of the 4-cycle engine; and fuel injection equipment and governors.—**Hercules Motors Corp.**, Canton, Ohio.

● Note that these Engineer's Pattern "Superrenches" are thin enough to operate jam nuts.

**YOU GET
STREAMLINED
STRENGTH
WITH
WILLIAMS
"Superrenches"**



Awkward, hard-to-reach adjustments present no problem for these streamlined "Superrenches". Forged from alloy steel, they are light in weight yet their strength is equal to that of the strongest wrenches made. Available in all popular patterns, with openings from 3/16" to 3-1/8". "Superrenches", with highly polished heads, are handsomely finished in durable chrome plate, over nickel.



OPEN END, BOX, ADJUSTABLE & RATCHET WRENCHES, DETACHABLE SOCKETS & SETS, IMPACT SOCKETS, TOOL HOLDERS, LATHE DOGS, "C" CLAMPS, CHAIN PIPE TONGS & VISES, FLANGE JACKS, PLIERS, SCREWDRIVERS, PUNCHES & CHISELS, SOFT FACED "NUPLAFLEX" TIPPED HAMMERS, HOIST HOOKS, EYE BOLTS, ROD ENDS, CRANK & BALANCE HANDLES, THUMB SCREWS & NUTS.

J. H. WILLIAMS & CO., BUFFALO 7, N. Y. *Distributors Everywhere*

Those Small Jobs Go Easier - - - and Faster

**with
SYNTRON**

Portable

ELECTRIC TOOLS

—drilling, cutting, chipping and scaling concrete and masonry—with Electric Hammers.

—drilling, sanding, buffing and polishing wood and metal—with Electric Drills and Sanders.

—grinding welds, snagging castings and wire brush work—with Electric Grinders.

Sturdily constructed, high quality tools—available in a variety of models, styles and capacities.

Write for illustrated literature

SYNTRON CO.

500 LEXINGTON

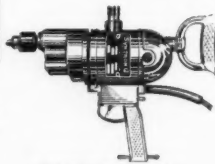
HOMER CITY, PA.



GRINDERS



SANDERS



ELECTRIC DRILLS



Dependable
ELECTRIC HAMMERS



DESIGN DATA—(19-p. booklet) New bulletin, No. 27, is titled, "Design Data Formulas and Charts for Computing Maximum Stresses in Angles, Ribbed Plates, and Shear Resistant Webs Containing Cut Outs." This is the second booklet resulting from extensive design research and contains formulas and charts on the subject. Booklet is accompanied by a supplement that provides typical examples of applications of the data with specific references to the bulletin contents.—**Meehanite Metal Corp., Pershing Square Building, New Rochelle, N. Y.**

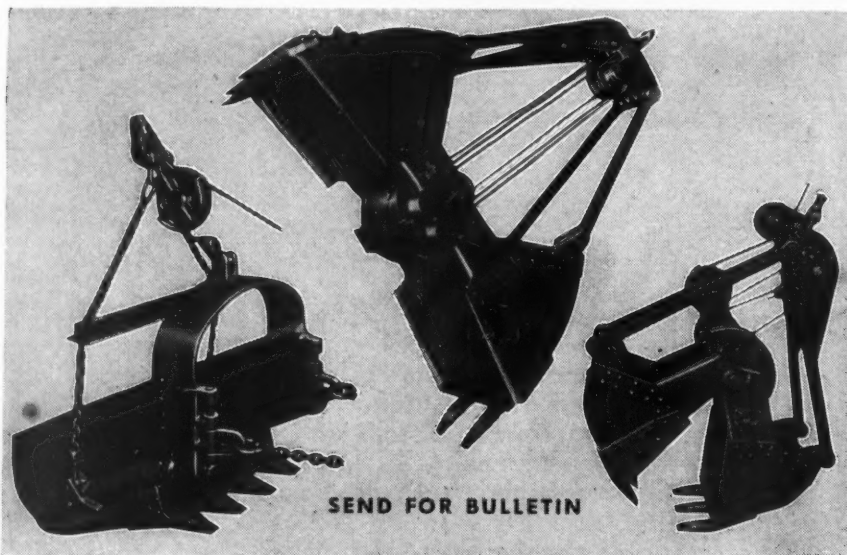
HOISTS—(15-p. booklet) Catalog HE8 gives data on the "Erectors" model 2-speed hydro-hoists, 60 to 100 hp., with two-speed automotive transmission and hydraulic finger-tip control.—**The Jaeger Machine Co., Columbus 16, Ohio.**

HYDRAULIC SYSTEM SOLVENT—Bulletin describes Hydro-Solv "A"—a new product for removing gum, sludge and other efficiency reducing contaminants from hydraulic systems. Product is also recommended for cleaning gear units. Complete instructions are given for use.—**Swan-Finch Oil Corp., 30 Rockefeller Plaza, West, New York 20, N. Y.**

LIGHTING SYSTEMS—(28-p. booklet) A comprehensive bulletin on the popularly acclaimed new louvered ceiling lighting system—the "Sky-Glo" system. The bulletin is said to answer demands for comprehensive data and give complete general specifications.—**The Benjamin Electric Mfg. Co., Department N.R., Des Plaines, Ill.**

COMPRESSORS—Three new catalogs have been issued by the Jaeger Machine Co.: Catalog No. JC-8 covers new standard "Air Plus" compressors; catalog TM-8 covers Jaeger Hi-Dump truck mixer, and catalog M-8 covers trailer mixers.—**Jaeger Machine Co., 550 W. Spring St., Columbus 16, Ohio.**

FIRE DOORS—(12-p. booklet) Issued by the National Metalclad Door Assn., this booklet is directed to building officials, fire prevention officials, architects and engineers who are responsible for specifying fire doors in buildings. The booklet offers revised and more complete definitions for code and ordinance purposes, and a more comprehensive means of specification.—**National Metalclad Door Assn., 550 Ellicott Square, Buffalo 3, N. Y.**



SEND FOR BULLETIN

For Longer Life!
WELLMAN
Williams Type **BUCKETS**

Count on longer life and more efficient service...due to Wellman original welded rolled steel construction. You get the maximum digging power, and exceptional strength—without excessive weight! Specify Wellman, and you'll specify the best bucket for your purpose.

THE WELLMAN ENGINEERING COMPANY

7017 CENTRAL AVENUE

CLEVELAND 4, OHIO

Relocation Job in Eastern New York



As first step in clearing the way for 36-ft-span bridge, crawler crane, equipped with clamshell bucket and sturdy wire rope, scoops heavy load of gravel from creek bed.

Bethlehem Bar Mats, delivered from warehouse direct to job, are unloaded from truck alongside newly graded strip of road.



Placing Bethlehem Bar Mat over initial course, as skip mixes new batch.



To cut path for new highway, drill steel goes to work on wall of solid rock from three different angles.



F. W. Jordan (left), chief engineer for S. A. Scullen, Inc., confers with F. A. Murphy, assistant engineer.

Conditions necessitated more than five miles of relocation recently on New York's much traveled Route 22, between Petersburg and North Petersburg. Construction of this new highway, part of which is

shown in the accompanying pictures, was handled by S. A. Scullen, Inc., Waterford, N. Y. Bar mats for approximately 76,000 sq yd of pavement were among the steel items supplied by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand
Hollow Drill Steel • Spikes • Bolts and Nuts • Pipe
Timber Bridge Hardware • Tie-Rods • Sheet and H-Piling
Fabricated Structural Steel





Operation of production machinery in the presence of moisture, steam and acids has always been a serious problem in many processing industries. There are a number of LUBRIPLATE lubricants that satisfactorily meet these unfavorable operating conditions, thereby protecting machine parts against rust and corrosion. Write for interesting particulars.

LUBRIPLATE

Lubricants definitely reduce friction and wear to a minimum. They lower power costs and prolong the life of equipment to an infinitely greater degree. LUBRIPLATE arrests progressive wear.

LUBRIPLATE

Lubricants protect machine parts against the destructive action of rust and corrosion. This feature alone puts LUBRIPLATE far out in front of conventional lubricants.

LUBRIPLATE

Lubricants are extremely economical for reason that they possess very long life and "stay-put" properties. A little LUBRIPLATE goes a long way.



LUBRIPLATE
FISKE BROTHERS REFINING CO.
NEWARK 5, N. J. TOLEDO 5, OHIO

DEALERS FROM COAST TO COAST
CONSULT YOUR CLASSIFIED TELEPHONE BOOK

ROOFING—(24-p. booklet) A new illustrated booklet is designed to aid architects and contractors in educating their customers on the importance of a good roof. The booklet, "One Metal Roof . . . for the Life of Your Building," discusses the destructive effect on roofs of smoke, fumes and other corrosive agents common to industrial centers. Full data on a new, soft-temper Monel roofing sheet is presented.—**International Nickel Co. Inc., 67 Wall St., New York 5, N. Y.**

WATERPROOFING FABRIC—(12-p. pamphlet) Describes advantages of an inorganic waterproofing membrane fabric, called "Glasfab," made of Fiberglas and developed as a reinforcing fabric for bituminous waterproofing compounds. Material is described as being impervious to dampness, strong and durable, unaffected by heat and not subject to capillary action that might tend to dry out the waterproofing compound. It is available in roll widths of 2 in. to 36 in.—**Lexington Supply Co., 4815 Lexington Ave., Cleveland 3, Ohio.**

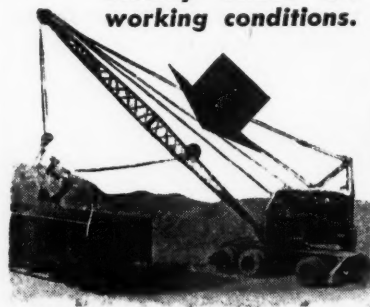
BATCHERS—6-p. folder on Noble weigh batcher has been released, describing three types of batching controls—manual, semi-automatic, and full-automatic. Dial scales, recently made optional equipment on manual and semi-automatic batchers, are included in the folder.—**Noble Co., 1860 7th St., Oakland 7, Calif.**

TESTING MACHINES—4-p. bulletin, No. 282, describes and illustrates Baldwin-Tate-Emery universal testing machine models 20-35 and 60-35 with respective capacities of 20,000 and 60,000 lb. These machines apply and measure loads hydraulically using precision lapped-ram construction in conjunction with three-range Tate-Emery Null method dial indicators.—**Baldwin Locomotive Works, Testing Equipment Dept., Philadelphia 42, Pa.**

WALL CHARTS—In line with the recent formation of their Wire Rope Sales Division, R. G. LeTourneau, Inc. has published a new Tournarope wall chart. This chart lists the features incorporated into the design and production of Tournarope; gives the types and constructions; and lists its applications in the earthmoving, hauling and lifting equipment fields. On the inside fold of the chart are listed the cable requirements for LeTourneau scrapers, dozers, cranes and rooters.—**Advertising Department, R. G. LeTourneau, Inc., Peoria, Ill.**

RUD-O-MATIC TAGLINE

Provides positive, steady tension — holds buckets steady under all working conditions.



Spring tension holds buckets steady. No weights, pins, tracks, or carriages. Cable saving more than pays for RUD-o-MATIC. Compact—easily installed. Eight models to fit all bucket sizes.

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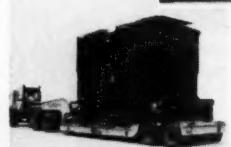
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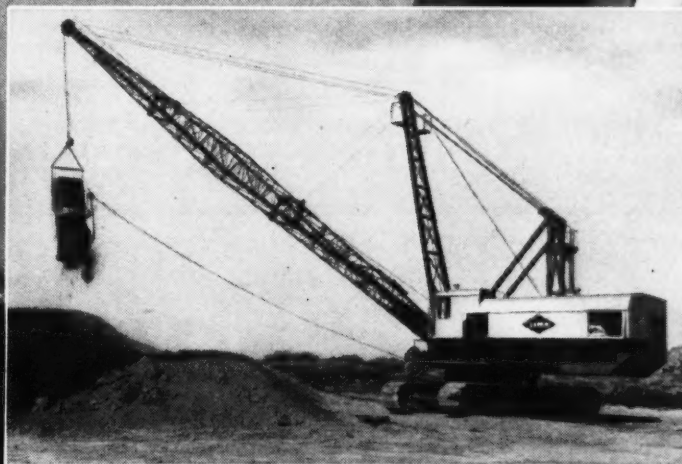
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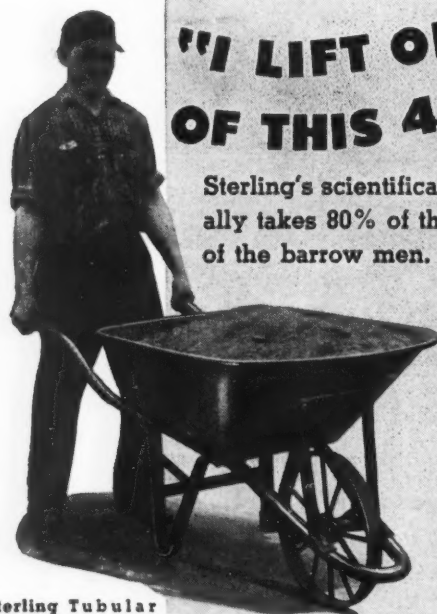
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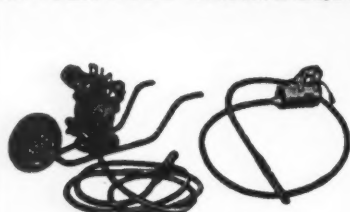
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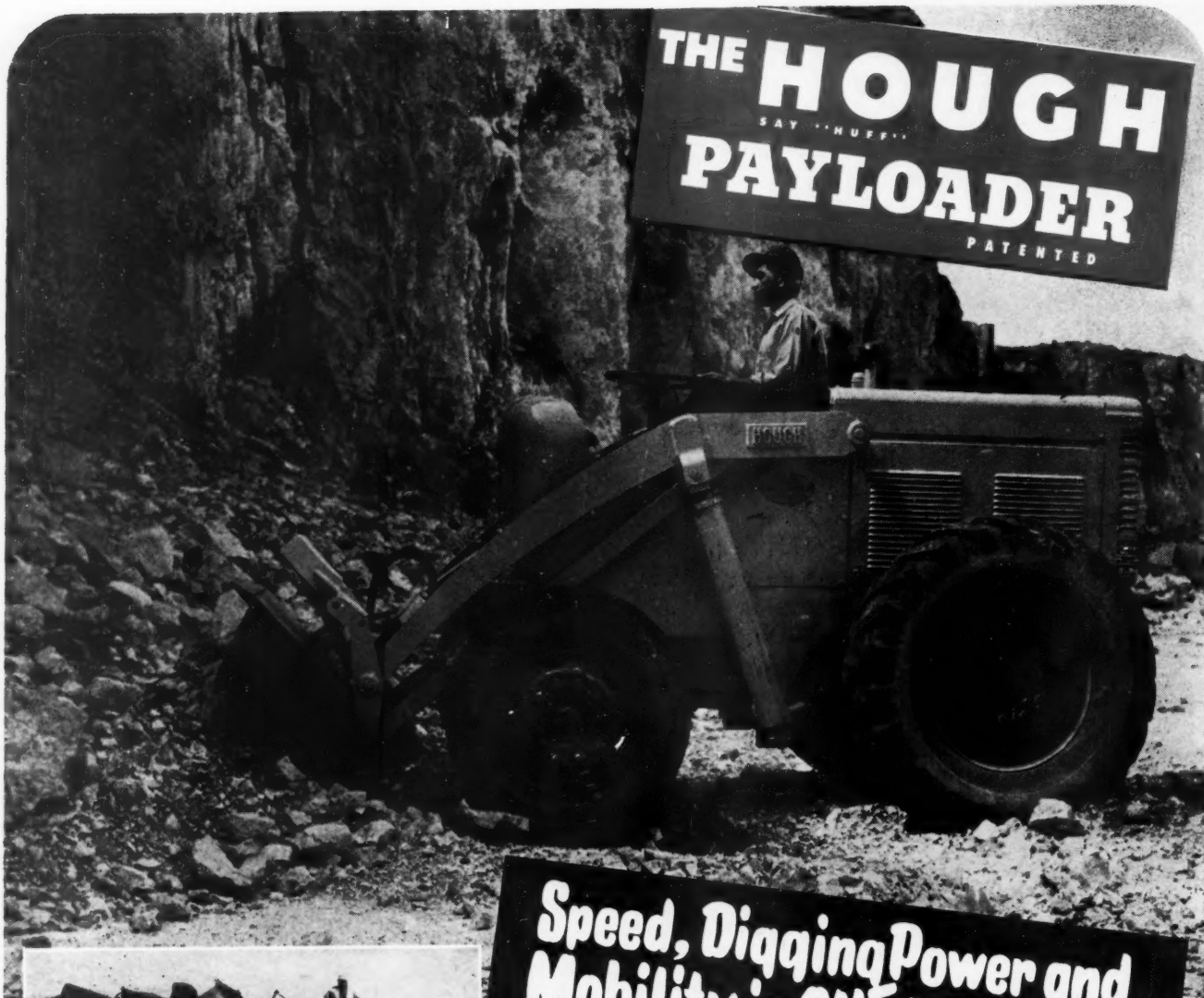
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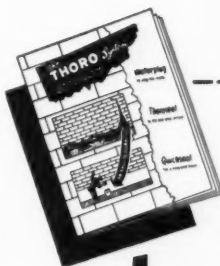
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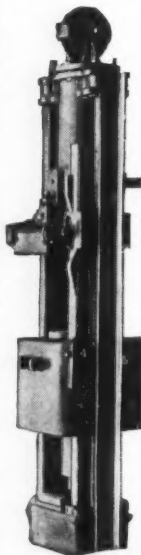
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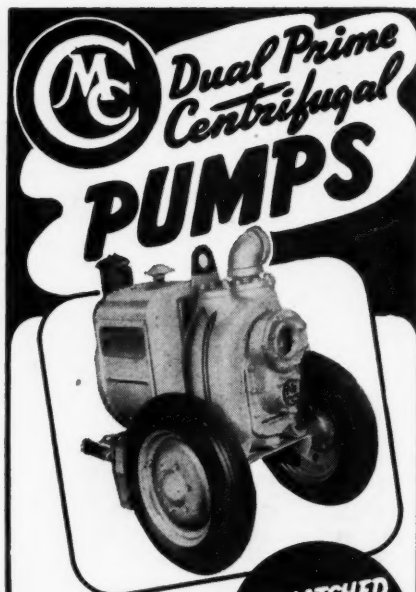
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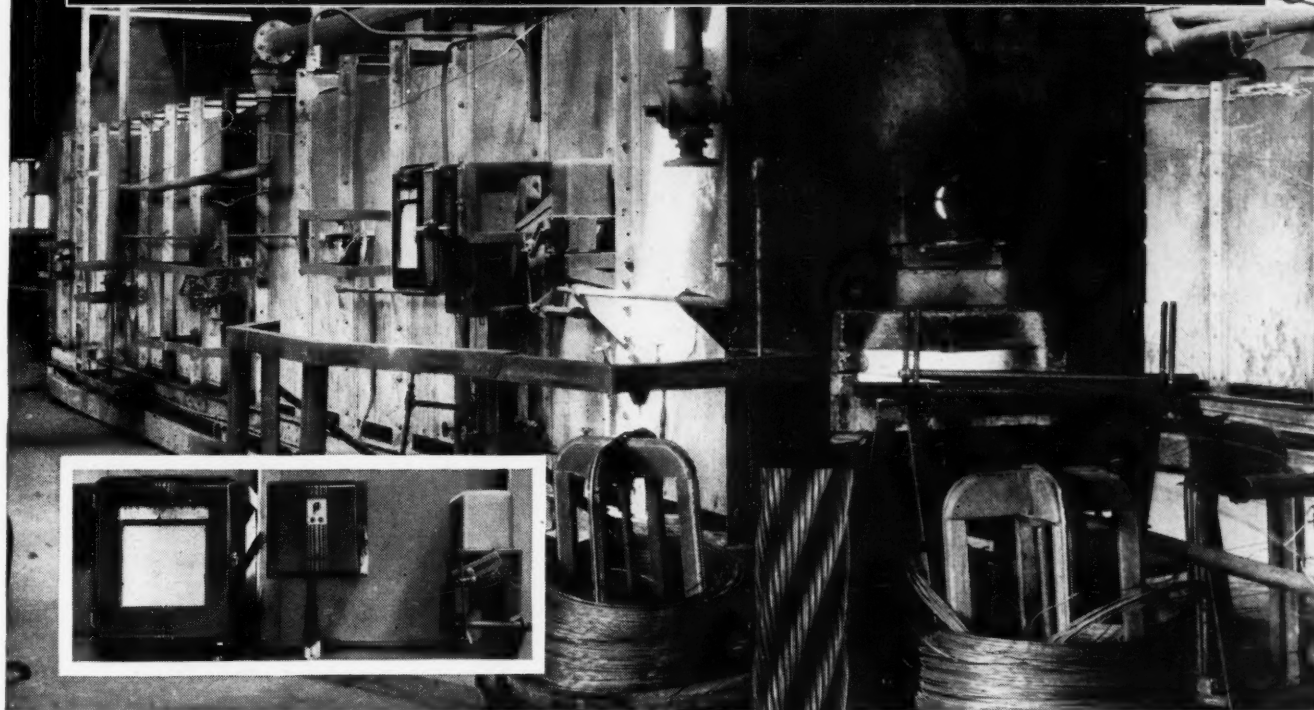


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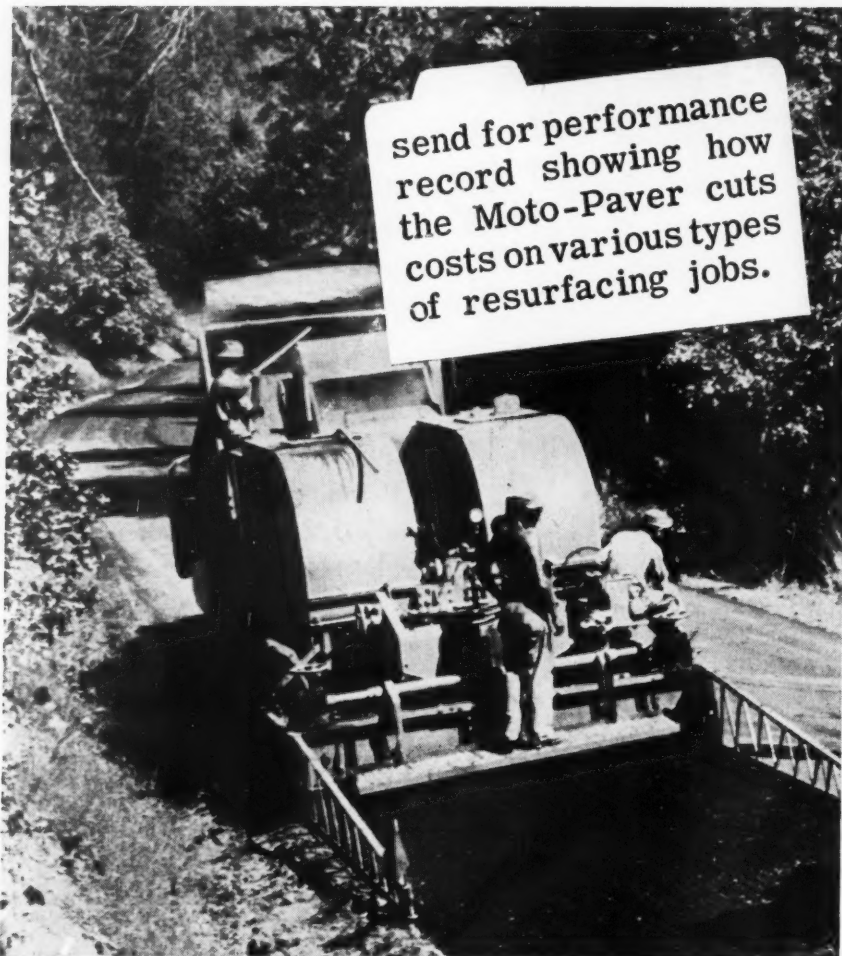


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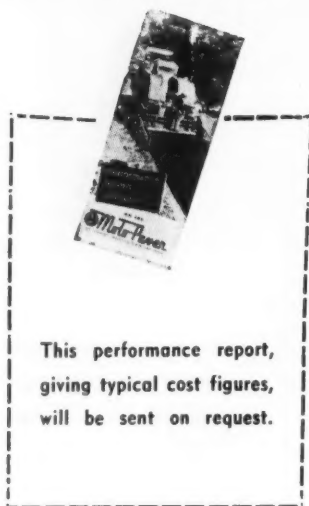
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At least that has been the experience of contractors who have been using Moto-Pavers for well over a year now—on all of these different types of jobs, and with various types of aggregate and bituminous materials. Typical cost figures reveal amazingly low costs per ton. Would you like to see these figures? Write us today.

HETHERINGTON & BERNER, INC.

735 Kentucky Avenue

Indianapolis 7, Indiana



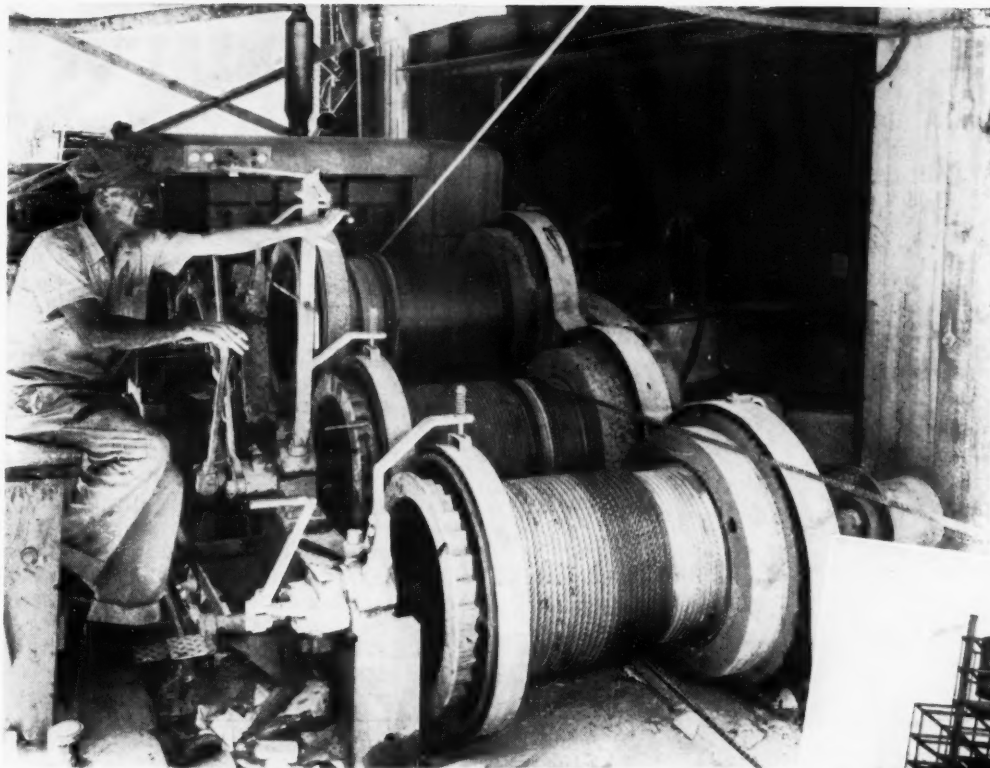
LIGHTWEIGHT PUMPS—(4-p. folder) Describes characteristics, performance and uses of lightweight centrifugal self-priming pumps. Three sizes include Midget 1½ in., the Hawk 2 in. and the Eagle 3 in. Bulletin 7LW-13 describes improved priming principle. Weights of pumps range from 62 to 117 lb. All models are constructed of cast aluminum for lightness and are equipped with carrying handles. — **Gorman-Rupp Co., Mansfield, Ohio.**

ELECTRIC CABLE HOIST—(8-p. bulletin) Bob-Cat line includes new 3- to 5-ton models featuring reduction in size by inclosing motor inside cable drum. Cutaway view shows details of double internal (epicyclic) gear train employed instead of straight gear train commonly used. Standard lift is 20 ft. Capacities range from 2,000 to 10,000 lb.—**Lisbon Hoist and Crane Co., Lisbon, Ohio.**

MOTOR SCRAPER—(12-p. booklet) Illustrates motor scraper in action and details of its construction. Also detailed specifications for TS-300 machine.—**LaPlant-Choate Mfg. Co., Cedar Rapids, Iowa.**

SOLUTION PURIFICATION—A 24-p. 3-color publication traces the development of de-ionization techniques and describes Dorr equipment and services now available for all types of ion-exchange work. It is explained that great progress has resulted from the development of synthetic organic resins, or organo-atites and ion-exchange applications has been broadened correspondingly. Of particular interest is a section about water treatment where deviations from normal ion-exchange are sometimes required.—**The Dorr Co., 570 Lexington Ave., New York 22, N. Y.**

WHITE ENAMEL FOR INDUSTRIAL INTERIORS (6-p. folder) Vita-Lux enamel is extremely white, tough and fast-drying with superior light reflection qualities for interior walls and ceilings. Explains how proper selection of paint brightens interiors of industrial concerns, improves worker morale, cuts down on accidents and increases production. Enamel is available in several finishes—gloss, semi-gloss, flat, undercoat and primer sealer to fit all requirements.—**Vita-Var Corp., Newark, N. J.**



Clyde Gasoline Hoists for those Big Jobs!

Clyde quality equipment on your job means progress assurance at all times. Clyde hoists are husky machines, built to work and keep on working under the most severe conditions.

Every part is carefully engineered for its particular duty . . . every piece is accurately made to provide easy operation, low cost maintenance and safe and dependable performance.

Clyde gasoline hoists are available in one, two and three drum sizes with line pulls from 1,500 lbs. to 30,000 lbs.

Special bulletins giving complete specifications and construction details are available on Clyde
GASOLINE HOISTS . . . ELECTRIC HOISTS
. . . STEAM HOISTS . . . WHIRLEYS . . .
CAR PULLERS . . . BUILDERS TOWERS . . .
DERRICKS . . . ROLLERS . . . HAND POWERS.



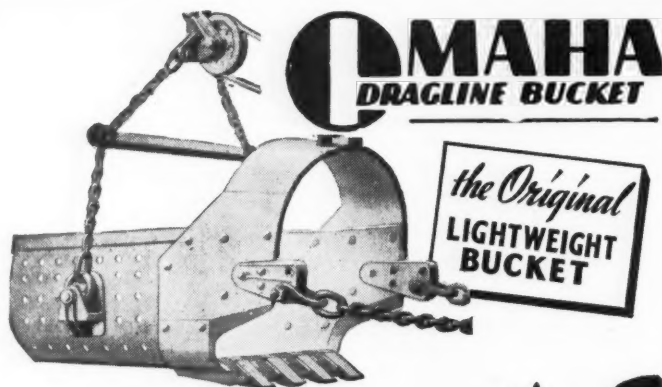
Another important addition to progressive Dallas, Texas is the M and W Tower. This new 22 story office building has a Clyde three drum gasoline hoist to handle materials and supplies. One drum handles a concrete bucket, another drum operates a material elevator while the third drum is used for a Chicago. A 10,000 lb. line pull at 235 f.p.m. provides fast and efficient service.



CLYDE IRON WORKS, Inc.

Duluth 1, Minnesota

A SUBSIDIARY OF
Barium
STEEL CORPORATION
Steelwright to the Nation

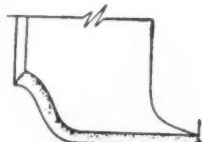


the Original
LIGHTWEIGHT BUCKET

First in the Field!
WITH FEATURES LIKE THESE



BOX TYPE ARCH
Welded and stayed throughout—has greater strength and more resilience than a solid arch.



CUTS LIKE A SPADE
Proper pitch and special hardening process holds its edge. Outwears and outdigs.



PERFECT BALANCE
Perfect suspension—carries load evenly—no spilling.

DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.



GET **TWICE** THE LIFE WITH
CAINE

CORR-PLATE



1. **STANDARD**



2. **INTERLOCKING**

STEEL PILING!

Now Caine Corr-Plate Steel can be ordered in a new steel alloy which gives it 100% greater corrosion resistance. This practically doubles the service life of your piling. Tests also prove this new alloy to be 25% stronger, giving you equal strength in a 25% lighter piling.

Caine Corr-Plate Steel Piling can be used over and over again, thus distributing its cost over a great many jobs. It's nestable, easy to drive, and watertight.

The world over, Caine Corr-Plate Steel Piling is being used for Foundations, Dams, Retaining Walls, Docks, Levees, Bulkheads, Sewers, Disposal Plants and hundreds of other jobs.

Now, More Than Ever Before...
STRONGEST Per Pound Weight



2894

CAINE STEEL COMPANY

Steel Piling Division, 1820 N. Central Avenue, Chicago 39, Illinois



EQUIPMENT MEN and Their Companies

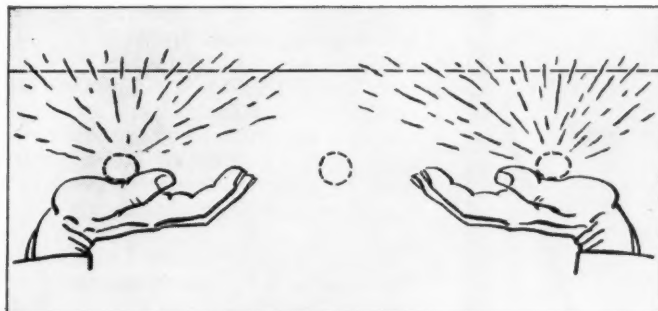
Current developments among manufacturers relating to expansion of services, shifts in personnel, and other changes, include the following:

SALES—Robert H. Taylor has been appointed territory salesman for Washington, northern Idaho, and Montana by the **Pennsylvania Rubber Co.** . . . Max Bradshaw has been appointed **Allis-Chalmers** district manager for Ohio, West Virginia and western Pennsylvania. . . . **Marion Power Shovel Co.**, Marion, Ohio, announces the appointment of **John K. Dolan** as district manager in charge of its Kansas City, Mo., office. . . . **Link-Belt Co.** has announced the appointment of **Crozier S. Wileman** as district sales manager at Wilkes-Barre, Pa. . . . **William W. Hickey** now represents the **Flexible Steel Lacing Co.** in the New England and New York territory. . . . **Kenneth F. Whitfield**, formerly assistant general sales manager, has been promoted to advertising and sales promotion manager of **Walker-Turner**, Division of **Kearney & Trecker Corp.**, Plainfield, N. J. . . . **The Buffalo-Springfield Roller Co.** of Springfield, Ohio, announces the appointment of **Ralph L. Wolf** as central district sales manager. . . . **George J. Fischer** has been named manager of national accounts of the **Industrial Products Sales Division** of the **B. F. Goodrich Co.** . . . **Dan Ebberts** has rejoined the **Madsen Iron Works** of Huntington Park, Calif., as national sales manager for the Madsen road construction equipment. . . . **The Universal Concrete Pipe Co.** has promoted **Thurman Manley** from Nashville office manager to sales representative for middle Tennessee. . . . **J. M. Haughey** has been placed in the position of sales manager by the **Washington Iron Works**, Seattle, Wash. . . . **Pennsylvania Refining Co.**, Cleveland, Ohio, announces the appointment of **Frank H. Webber** to its sales force. . . . Appointment of **A. J. Belanger** as bituminous equipment sales engineer for **Pioneer Engineering Works**, Minneapolis, Minn., has been announced. . . . **The Chicago Bridge & Iron Co.** has established sales offices in Salt Lake City, Utah, and **J. Graham Daniels** has assumed duties as its manager. . . . **Chain Belt Co.** announces the opening of a new district sales office at Richmond, Va., with **Fred W. Taylor** as district manager. . . . **Louis W. Mason** has been appointed assistant to the general manager of sales of the **National Tube Co.**, subsidiary of **United States Steel**.

(Continued on page 168)

ROCKMASTER BLASTING Is Different!

First It Pushes



Beginning of one type of ROCKMASTER shot. The two outside holes "go" first, placing rock under tension and tending to open up any natural partings in rock and setting up shear planes between holes.

Then It Punches



Second part of ROCKMASTER shot comes milliseconds later, as center hole detonates, taking advantage of first part of blast and doing an unprecedented amount of work.

And What a Difference in Results!

1. More rock ready for the shovel.
2. Better fragmentation—less secondary blasting.
3. Far less "back-break" in quarries. Less pulverizing of coal in strip pits.
4. Minimum noise and vibration—even though more holes may be fired.
5. Wider spacing of drill holes can frequently be used, saving drilling costs and explosives costs.
6. Better control of "throw."

Rockmaster blasting is saving thousands of dollars with results like these in pits and quarries and on construction jobs—wherever it is applicable.

An original Atlas development—the Rockmaster system is tailor-made for each job. Choice of explosives, detonators, spacing and loading—all are considered for your individual requirements.

Call in the Atlas representative today. He will tell you frankly whether Rockmaster can get the same excellent results for you as it does for hundreds of others.

"ROCKMASTER"—Trade Mark
Manasite: Reg. U. S. Pat. Off.

THE GREATER SAFETY OF ATLAS MANASITE DETONATORS

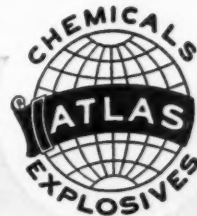
Remember, the Atlas Rockmaster Blasting System also incorporates Atlas Manasite. This means decreased sensitivity to impact and friction—no sacrifice of efficiency but less chance of accident!



+

ATLAS

EXPLOSIVES
"Everything for Blasting"



ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco

ROBINSON *Air-Activated* CONVEYOR Move Your Cement from the Siding

Low volume air means minimum load on the compressor, an important cost item.

Moisture-free air means clean, non-encrusted piping.

Low maintenance equipment means freedom from costly shut-downs or high parts inventory.

The Robinson Air-Activated System operates with no continuously moving parts such as gears, screws, or feeder apparatus. Maintenance with it is negligible.

Most of the large dam contractors have used and are using the Robinson System for handling bulk cement from hopper cars to job. The equipment is part of their "stable". Perhaps you, too, would lower your cement handling costs by using this system.

1
2
3

... By low volume air

... By moisture-free air

... By low-maintenance equipment



Represented in
England by
Blaw-Knox, Ltd.
London

Represented in
the French Union
and Benelux by
Cie Francaise
Blaw-Knox, Paris

ROBINSON

Air-Activated

Division of
MORSE BOULGER DESTRUCTOR CO.

CONVEYOR SYSTEMS

Representatives in Principal Cities

211-C East 42nd Street • New York 17, N. Y.

(Continued from page 166)

DISTRIBUTORS — The Tennessee Heating Sales Co., Knoxville, has been appointed distributor for Dravo "Counterflo" heaters in Tennessee, east of the Tennessee River; south-east Kentucky; southwest Virginia; and North Carolina west of Asheville. . . . Appointment of **George Park Tractor Co.**, Macon, Ga., to a full-line dealership is announced by the **Davey Compressor Co.** . . . **United States Rubber Co.** has named the **Graybar Electric Co.** exclusive distributor for Uskon conductive rubber panels used in radiant heating by electricity. . . . **R. G. Dinham Co.** of Minneapolis, Minn., has been named as distributor by **Economy Pumps, Inc.**, Hamilton, Ohio. . . . **The George Haiss Mfg. Co., Inc.**, New York City and Chicago, announces the appointment of **H. D. Williams** in Philadelphia as their exclusive representative in eastern Pennsylvania.

George Parker Tractor Co., Macon, Ga., has a full line distributorship for the **Davey Compressor Co.** for Northern Georgia, adjacent to the territory of Florida-Georgia Tractor Co. . . . **The National Mill Supply Co.**, Fort Wayne, Ind., is now a dealer for **Davey Compressor Co.**, Kent, Ohio. . . . **The Tennessee Heating Sales Co.**, Knoxville, has been appointed distributor for Dravo "Counterflo" heaters in Tennessee, east of the Tennessee River, southeast Kentucky, northwest Virginia and North Carolina, west of Asheville.

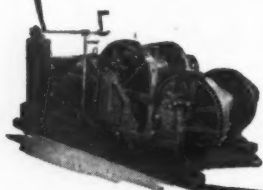
RENT A THOMAS HOIST For Your Building Jobs Direct From the Manufacturer

Since 1873, Thomas-built hoists have been designed for dependable, economical service.

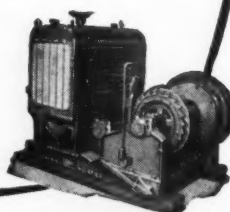
NOW AVAILABLE — IN STOCK

The Thomas patented "Band Friction" grips positively, releases easily—**ELIMINATES OPERATOR FATIGUE**. The Thomas patented "Back-Up" brake requires no power, sets and releases automatically. **QUICKLY INTERCHANGEABLE PARTS**, and **PROMPT, DEPENDABLE SERVICE** means Thomas Hoists Keep the Job Going. One, two or three drum hoists up to 100 H.P. gasoline or electric powered.

Write **NOW** for **NEW FOLDER No. 101** showing in detail the trips per hour normally obtainable with the various types of Thomas Hoists that are engineered to fit a particular job.



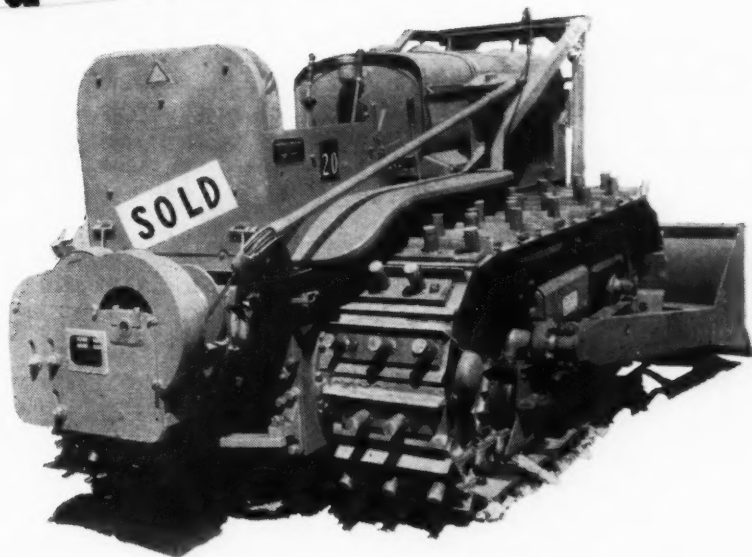
THOMAS HOIST CO.
22 S. HOYNE AVENUE
PHONE SEELEY 0303
CHICAGO 12, ILL.



PERSONALITIES—Appointment of **Allen L. Chaplin** as project engineer at its Natrium, W. Va., plant has been announced by the Columbia Chemical Division of **Pittsburgh Plate Glass Co.** . . . **Paul Queneau** has been appointed metallurgical engineer of **The International Nickel Co. of Canada, Ltd.**, and subsidiaries. **George C. Romeiser** has joined the staff of the technical department of the **National Lumber Manufacturers Association** to specialize in the field of hardwood utilization and government lumber specifications. . . . **Lawrence W. Early** has been transferred to the **Hercules Powder Co.'s** Salt Lake City office to be succeeded in the Los Angeles office by **Robert W. Crabtree**. . . . **A. B. Ordway** has been appointed to the executive staff handling overall policies of the **Henry J. Kaiser Industries**. . . . **General Brehon Somervell**, president of **Koppers Co., Inc.**, has announced the resignation of **Allen W. Morton** as vice-president and general manager of the company's piston ring division. . . . **J. S. Ferguson**, general superintendent of the Hamilton plant of **Armco Steel Corp.**, has been appointed technical director of the Argen-

(Continued on page 170)

after the sale is over...



THEN WHAT?

Of course, *what* you buy is important... but so is *where* you buy.

Experienced equipment users know that price tags reveal only a fraction of total equipment costs.

The most reliable equipment in the world requires proper day to day maintenance... plus unavoidable emergency repairs. *That's why dependable, "after sale" service is so essential to minimum equipment operating costs... to successful execution of construction plans.*

HERE ARE IMPORTANT REASONS WHY IT REALLY PAYS TO BUY THROUGH YOUR LOCAL DISTRIBUTOR...

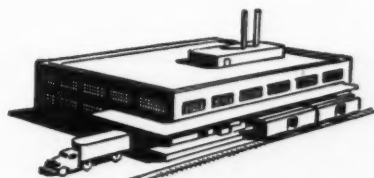
- ★ Quick parts replacements from well-stocked distributor warehouses cut expensive equipment "down-time"... reduce costly investment in on-the-job parts stocks.
- ★ Routine "after sale" field check-ups by qualified distributor servicemen assure top equipment performance.
- ★ Emergency repairs at the job site by on-call distributor repair crews help keep job schedules and job budgets intact.
- ★ Major repairs, made at minimum cost by factory-trained experts with full repair shop facilities, put your equipment back on the job with least delay.

No question about it when you buy through your local distributor...

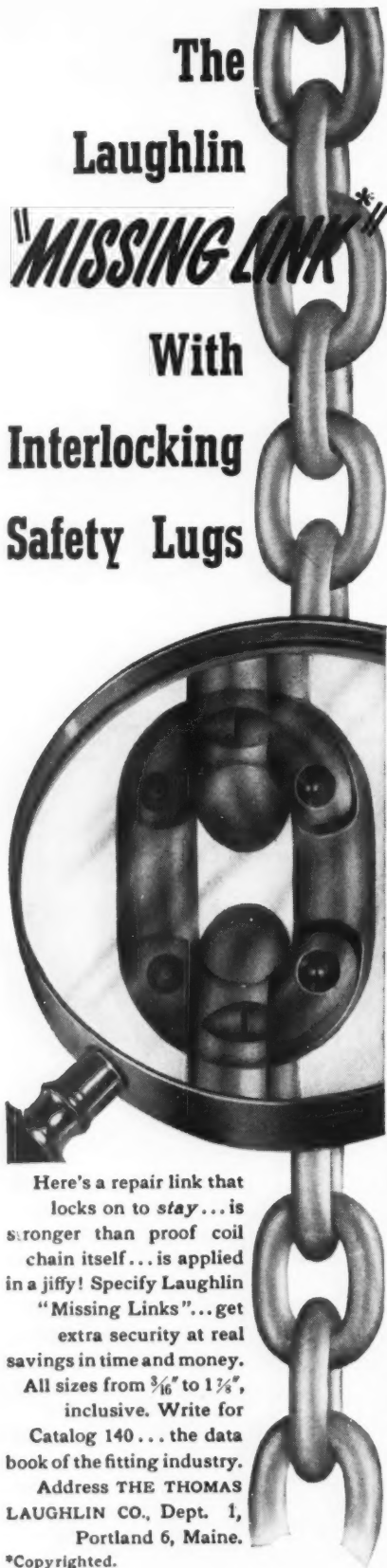
AFTER THE SALE IS OVER... SERVICE STARTS

*Make Distributor's Headquarters
Your Service Headquarters*

No. 9 in a series of advertisements sponsored by ENGINEERING NEWS-RECORD and CONSTRUCTION METHODS showing how distributor services aid economical construction.

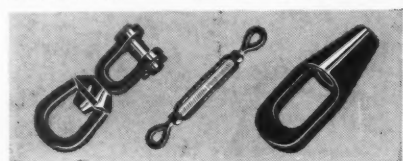


The
Laughlin
"MISSING LINK"
With
Interlocking
Safety Lugs



Here's a repair link that locks on to stay... is stronger than proof coil chain itself... is applied in a jiffy! Specify Laughlin "Missing Links"... get extra security at real savings in time and money. All sizes from $\frac{3}{16}$ " to $1\frac{1}{4}$ ", inclusive. Write for Catalog 140... the data book of the fitting industry. Address THE THOMAS LAUGHLIN CO., Dept. 1, Portland 6, Maine.

LAUGHLIN
THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



(Continued from page 168)

tine Steel Division of the Armco International Corporation. . . . W. G. Kaiser, manager of the Portland Cement Association's Farm Bureau, has been appointed assistant director of promotion. . . . A. P. Heiner has been made assistant to the vice-president in charge of public relations for the Kaiser Co., Inc., Iron and Steel Division. . . . The American Steel & Wire Co. has announced the appointment of James McCulloch as superintendent of construction, and Frederick C. Keiser merchant products engineer. . . . James E. Morrison has joined Hugh G. Purcell Co., Seattle, Wash., northwestern sales agent for the United States Pipe & Foundry Co. . . . American Acoustics, Inc., has named George E. Koch as its new plant manager.

John R. Swikard has been named plant manager of the Cincinnati factory of The Schaible Co., plumbing-heating manufacturers. . . . A. B. Ardway has been appointed to the executive staff handling the overall policies of the Henry J. Kaiser industries. . . . Herbert W. Pope has been made assistant to the president of the Lawrence Portland Cement Co. with headquarters at 150 Broadway, New York 7, N. Y. . . . Howard

(Continued on page 172)

WANT TO BE A CONSTRUCTION EDITOR?

- IF you have that irrepressible yen to write—
- IF you are a civil engineering graduate, 28 to 32 years old—
- IF you have had some practical construction experience in the field—
- IF you know construction equipment and its application—
- IF you like to travel and visit interesting construction projects—
- IF you have a flair for photography—

You're the man CONSTRUCTION METHODS is looking for as an assistant editor to work out of the New York office.

All inquiries will be treated confidentially. Please send summary of education, training and experience to

WALDO G. BOWMAN,
Editor, Construction Methods
330 W. 42nd St., New York 18, N. Y.

**SAVE TIME
On Every Job
WITH A
CLIPPER
MASONRY SAW**



Cuts

- FIRE BRICK
- BUILDING TILE
- CONCRETE BLOCKS

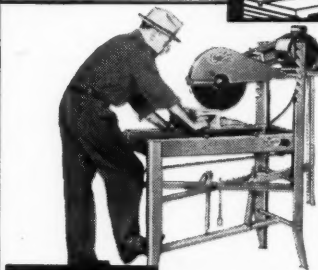
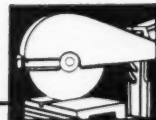
with

AMAZING Speed AND Accuracy

● You'll be amazed how quickly and easily you can cut virtually any special length or shape from the hardest masonry materials. Clippers save time — save material, assure better workmanship on every job.

Cuts DRY

Clipper's exclusive design is guaranteed to provide the highest economy with most rapid cutting speed. With or without foot pedal control.



Cuts WET

No dust. With foot pedal control or without. You can set the cutting head in locked position. The hardest materials cut with ease.

FAST and FLEXIBLE

The New Model HD-48 Clipper cuts dry just exactly the same as regular Clipper Masonry Saws... and for Dustless masonry cutting just turn on the circulating system and slice thru the hardest materials. Proven by ten years use throughout the world. Guaranteed to provide the fastest cuts with lowest cost.

TAILOR MAKE SPECIAL SIZES

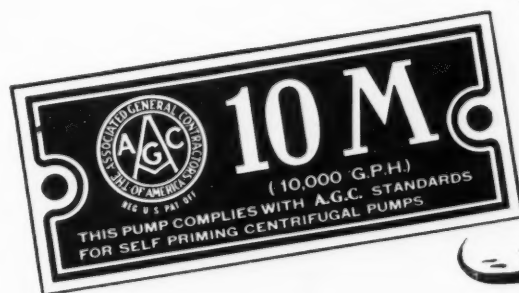
Yes... with a Clipper it's easy to slice thru Brick, Tile, Concrete, Glass, Marble, Porcelain or any kind of Refractories. . . . Straight cuts, Angles or Mitres. **CLIPPERS FOR EVERY JOB** — Priced as low as \$195. Write for Catalog Today!

**TRY A
CLIPPER
FREE**



THE CLIPPER MFG. CO.
2809 WARWICK • KANSAS CITY 8, MO.
PHILADELPHIA CLEVELAND ST. LOUIS AUSTIN, TEX.

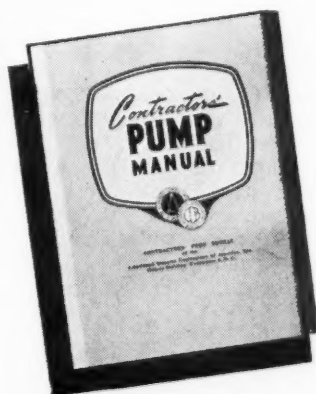
THIS A.G.C. RATING PLATE TAKES THE GUESSWORK FROM PUMP BUYING!



CRYSTAL GAZING is eliminated when you buy a pump with an A.G.C. Rating Plate. There is no guesswork about the pump's actual capacity — the work it will do. What is more, new and higher standards for pumping performance have now been set by the Contractor's Pump Bureau. For example, pumps formerly warranted to deliver 20, 65, 105 and 325 G.P.M. at static lifts of 10 ft. and heads of 70 ft. are now rated to deliver 85, 110, 160, and 415 G.P.M. at

the same lift and head. The Member Manufacturing Companies listed below are meeting these new Higher Head Standards as attested by the A.G.C. rating plate they place on their pumps.

Look for this A.G.C. Rating Plate on the next pump you buy. It takes the guesswork from pump selection. It assures greater output at higher heads—and much, much more for your money.



PUMP USER'S MANUAL

Forty pages packed full of useful information for the pump user. Answers all questions as to pump selection for the job — what size pump to use — the do's and don'ts of pump operation — standards for measuring heads and capacities — and other technical data. Contact your dealer or write any of the companies listed below for your copy.



CONSTRUCTION MACHINERY CO., Waterloo, Iowa
THE GORMAN-RUPP CO., Mansfield, Ohio
THE JAEGER MACHINE CO., Columbus, Ohio
MARLOW PUMPS, Ridgewood, N. J.
NOVO ENGINE COMPANY, Lansing, Michigan
STERLING MACHINERY CORP., Kansas City, Mo.
WORTHINGTON PUMP & MACHINERY CORP., Holyoke, Mass.
BARNES MANUFACTURING CO., Mansfield, Ohio
CARVER PUMP COMPANY, Muscatine, Iowa
C. H. & E. MANUFACTURING CO., Milwaukee, Wisconsin
CHAIN BELT COMPANY, Milwaukee, Wisconsin

CONTRACTORS PUMP BUREAU

(ESTABLISHED 1938)

Affiliated with

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.

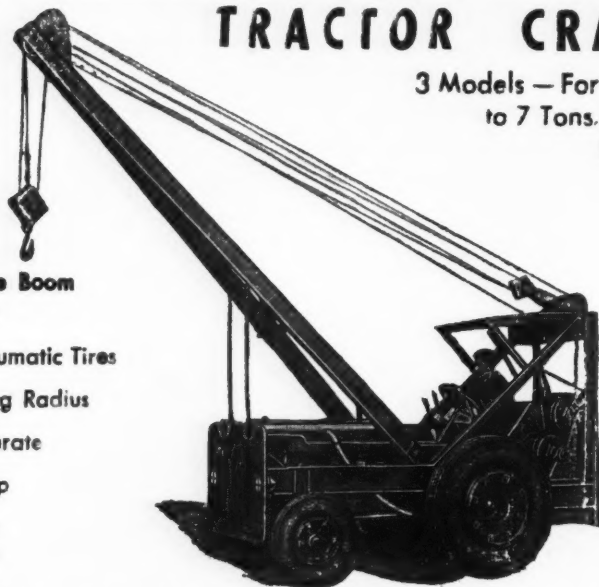
Munsey Building, Washington 4, D. C.

MERCER

"The Name that Carries Weight"
MATERIAL HANDLING EQUIPMENT

TRACTOR CRANES

3 Models — For Loads Up
to 7 Tons. Write for
literature



Special Type Boom
Designed
Solid or Pneumatic Tires
Short Turning Radius
Easy to Operate
Low Up-Keep
Clear Vision
Live Boom

MERCER ENGINEERING WORKS, INC.

Plant: Clifton, N. J.

SALES REPRESENTATIVE

MERCER-ROBINSON COMPANY, INC.
30 CHURCH ST., NEW YORK 7, N. Y.

CONTRACTORS RUBBER PRODUCTS

available from Stock for immediate Delivery

CONVEYOR, ELEVATOR and TRANSMISSION BELTING

all widths and plys

V-BELTS all sizes

HOSE all sizes

AIR	WATER	SUCTION	COMPRESSOR
FUEL	STEAM	WELDING	PILE DRIVERS
FIRE	VACUUM	DISCHARGE	ROAD BUILDERS

and BOOTS, DREDGE SLEEVES, PUMP DIAPHRAGMS, ETC.

and everything rubber for Industrial Requirements

PHONE . . WIRE . . WRITE

Write for new catalog

CARLYLE RUBBER

CO., Inc.

62-66 PARK PLACE NEW YORK 7, N. Y.

Phone: BArcley 7-9793

(Continued from page 170)

B. Steggall, vice-president in charge of the U. S. Radiator Corporation's Pacific steel boiler division has been elected a director. . . . James D. Hodges has been made eastern divisional manager of the portable heaters and ventilators of the Herman Wilson Corp., Moline, Ill. . . . Robert J. Russell has been elected secretary and appointed chief of the technical staff of Hardinge Co. Inc., York, Pa.

MISCELLANY — General Electric Co.'s welding equipment division has taken new residence at Fitchburg, Mass. . . . San Francisco has been chosen as the new location for new western divisional branch offices of the Clipper Mfg. Co., manufacturers of Clipper Masonry Saws. . . . The third Dealer Service Training School for 1948 will be held by the Four Wheel Drive Auto Co. this month in its Clintonville, Wis., plant. . . . A new wholesale distributing service parts depot will be constructed by the International Harvester Co. in St. Paul, Minn. . . . The Tremco Mfg. Co., will put into operation a new asphalt emulsion plant at Cleveland, Ohio. . . . The Linde Air Products Co., a unit of Union Carbide & Carbon Corp., has announced plans to construct an oxygen distributing station and acetylene producing plant at Fargo, N. D. . . . The name of Lancaster Iron Works, Inc., has been changed to Posey Iron Works, Inc., through action of the board of directors.

San Francisco has been chosen as the new western divisional branch office of the Clipper Mfg. Co., masonry saws, the location being 422 Market Street . . . Brown Instrument Co. will feature new types of electronic potentiometers and an operating exhibit of the new Remote Set system at the third national instrument conference, Sept. 13-17 at Convention Hall, Philadelphia . . . The Schaible Co. has started shipments of fittings, valves and heating specialties from its western sales division at 707 South Raymond Ave., Pasadena, Calif. . . . H. K. Ferguson Co., Cleveland, Ohio, has formed a new atomic energy division to specialize exclusively in nuclear engineering problems with Karl Cohen in charge. . . . A new customer engineering service department, under Robert C. Singleton, has been established by the Nelson stud welding division of Morton Gregory Corp. at its Lorain, Ohio, headquarters . . . Victor Equipment Co., manufacturer of flame cutting apparatus and distributor of welding supplies for 38 years, has opened a new Chicago branch office and assembly plant at 1312 West Lake Street . . . The Four Wheel Drive Auto Co. this month is holding its third dealer service training school at its home factory Clintonville, Wis.



Most Advantageous

... Because it costs so little more, there's no longer one valid reason for using any wire rope but

Preformed Wire Rope

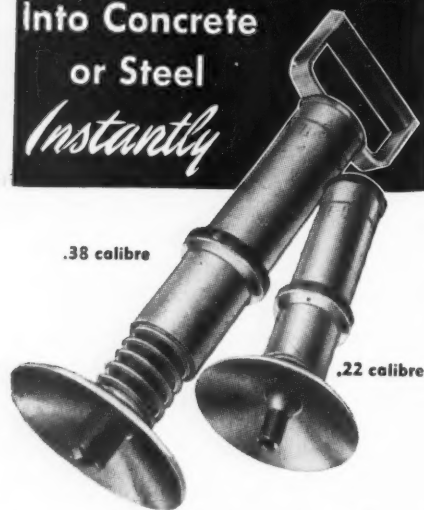
Ask your manufacturer or distributor to tell you why Preformed wire rope lasts so long, why it handles so easily, and why it saves you so much time and money.

"Drive-It"

The Powder-Powered Tool That

DRIVES STUDS

Into Concrete
or Steel
Instantly



Saves Time, Labor and Cost on Every Anchoring Job!

"DRIVE IT" drives threaded studs 3 inches into concrete or through 5/8-inch steel. Eliminates all drilling, hammering and expansion bolts. "DRIVE-IT" has made tremendous cost cuts in construction work, plumbing, air-conditioning, plastering, maintenance, highway and electrical work.

- WORKS INSTANTLY
- ANY DESIRED STUD OR PUNCH
- CARRIES ITS OWN POWER
- ABSOLUTELY SAFE
- UP TO 6000 LBS. HOLDING POWER
- NO RECOIL OR SHOCK
- LIGHTWEIGHT — EASY TO OPERATE
- ADJUSTABLE FOR ANY DEPTH
- NO DRILLING OR HAMMERING



40
Different Types
of Studs, Rivets,
Bushings and Punches

POWDER POWER TOOL CORPORATION

P. O. BOX 1610 Dept.
PORTLAND 7, OREGON (A)

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on "DRIVE-IT" Powder-Power Tools.

Name

Firm

Address

City..... State.....

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F-13A

Manufacturers use the advertising pages in this magazine to get news about their products or services to you... quickly and effectively. Their advertisements contain information designed to help you do your job better, quicker, and cheaper, which is just as newsworthy as the editorial columns. To be well-informed about the latest developments in your business, your industry... and to stay well-informed... read all the ads too.

McGRAW-HILL PUBLICATIONS



SEARCHLIGHT SECTION

(Classified Advertising)

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BUSINESS: : (Used or Resale)

UNDISPLAYED

90 cents per line minimum 4 lines. To figure advance payment count 5 average words as a line. Positions Wanted (full or part time salaried employment, only) $\frac{1}{2}$ the above rates payable in advance.

Box Numbers—Care of publication New York, Chicago or San Francisco offices count as one line. Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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Individual Spaces with border rules for prominent display of advertisements.

The advertising rate is \$8.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured $\frac{3}{4}$ " vertically on one column, 3 columns—30 inches—to a page. C.M.

DISPLAYED

REPLIES (Box No.):
Address to office nearest you.
NEW YORK: 330 W. 42nd St. (13)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

EMPLOYMENT SERVICE

ENGINEERS: LARGE college offers \$3000, approximately half-time teaching-studying. Position of all ranks for Masters, \$4500-\$6500. Cline Teachers Agency, East Lansing, Mich.

SUPERINTENDENT AND PRODUCTION MANAGER

EXPERIENCED WANTED FOR LARGE ASSEMBLY PLANT. Salary \$10,000-\$12,000 per year.

P-6165, CONSTRUCTION METHODS
330 West 42nd Street, New York 18, N. Y.

SALES MANAGER

Take complete charge of Sales Dept. for Tractor Distr. Engr. graduate, young, ambitious, with ability and a willingness to work. Must be a leader and know how to direct others. Excellent oppor. for the right man.

SW-6269, CONSTRUCTION METHODS
330 W. 42 St., NEW YORK 18, N. Y.

EARLY SHIPMENT Carload Quantities

ANGLES—equal and unequal
ROUND BARS—plain or deformed
FLAT BARS—all standard sizes

Made from RAIL STEEL

LYCOMING STEEL PRODUCTS, Inc.
233 Broadway, New York 7, N. Y.
BEekman 3-3046

HERE IS AN UNUSUAL OPPORTUNITY LIKE-NEW EQUIPMENT, IN PERFECT RUNNING ORDER, FOR SALE AT YOUR PRICE

NO REASONABLE OFFER REFUSED

1—34 E. Foote Paver—used only 125 hours (has paved only 1600 ft. roadway—merely a good operating test.)

1—Blow-Knox Concrete Finishing Machine (used only 125 hrs. 10 to 15 ft. machine, have all parts to convert to 20 ft. unit.)

Also—3000 ft. of 9" x 8" Road Forms. Like new—available for immediate shipment.

WRITE, WIRE OR PHONE TODAY

N. S. RINI

3328 Archwood Ave.
Phone Florida 2579

CLEVELAND, OHIO

FOR EVERY
BUSINESS WANT

"Think Searchlight First"

OFFERING SUBJECT TO PRIOR SALE DRAGLINE

1055 LC P & H Dragline 80' of boom. Machine ready for delivery. Priced right for quick sale. In excellent condition. Write, phone, or wire the A. C. R. CO., 19615 NOTTINGHAM ROAD, CLEVELAND 10, OHIO Phone KENmore 8000

WHERE TO BUY

COMPLETE

WELL POINT SYSTEMS
WILL DRY UP ANY
EXCAVATION

Faster—More Economically
Write For Job Estimate and 32 page Catalog

COMPLETE

MACHINERY & EQUIPMENT CO., Inc.
36-36 11th St., Long Island City, N. Y.

Tel. IRonnides 6-8600
Branch: Third Avenue & Adams St., Gary, Indiana
Telephone: Gary 22085

GRAVEL CRUSHING SERVICE

Cedar-Rapids Junior Tandem Portable
Crushing and screening plant. Will operate by hour or yard. Rates quoted on request. Write or Phone

E. R. WOLCOTT

BIG FLATS

NEW YORK

FULL VIEW . . . JOB AHEAD WITH SITTING COMFORT

Living room comfort in a chair designed for Power Shovels, Cranes, Tractors, Graders, etc.

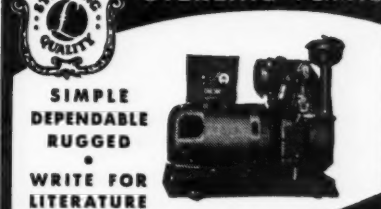


All metal . . . can be raised from 19" to 28" by hand lever. Seat moves forward or backward. Chair bolts down tight. Built for government . . . stands hard service. Now selling \$15 at . . . far below the price of production.

WEIL'S

20 South 2nd St.
Phila. 6, Pa.

STERLING LIGHT PLANTS



STERLING MACHINERY CORPORATION
405 Southwest Blvd., Kansas City, Mo.

Waterproof with Formula No. 640

A clear liquid which penetrates 1" or more into concrete, brick, stone, etc., seals—holds 1350 lbs. per sq. ft. hydrostatic pressure. Cuts costs: applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.

PROFESSIONAL SERVICES

LANCASTER, ALLWINE & ROMMEL Registered Patent Attorneys

Patent Practice before U.S. Patent Office. Validity and Infringement Investigations and Opinions. Booklet and form "Evidence of Concealment" forwarded upon request.

Suite 417, 815-15th St., N.W., Washington 5, D. C.

Your inquiry

will have

Special value . . .

If you mention this magazine, when writing advertisers. Naturally, the publisher will appreciate it . . . but, more important, it will identify you as one of the men the advertiser wants to reach with this message . . . and help to make possible enlarged future service to you as a reader.

MADESCO BLOCKS

stand the gaff

Madesco Auto Lub HS

Ideal for construction work, the HS is one of a complete line. Service it in off seasons and it requires no further care.

Madesco blocks are designed and built to meet your needs . . . special jobs made to your specifications.

wire rope
blocks



Send for
complete catalog

A quarter
century
of service

MADESCO
TACKLE BLOCK COMPANY
EASTON, PENNSYLVANIA

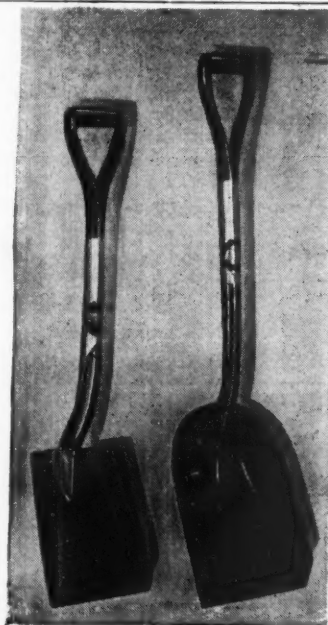
BREAK PAVEMENT the low cost way!

By Using THE MIGHTY MIDGET

Also tamps trench backfill. Puts back all dirt excavated, filling only once; tamps to sub-grade level, obtaining high, uniform compaction, leaving job ready for immediate pavement. (MM-5)



R.P.B. CORPORATION
2751 EAST 11th STREET • LOS ANGELES, CALIFORNIA



BLADE EDGES
GUARANTEED SPLIT-PROOF

INGERSOLL SHOVELS
"The Borg-Warner Line"

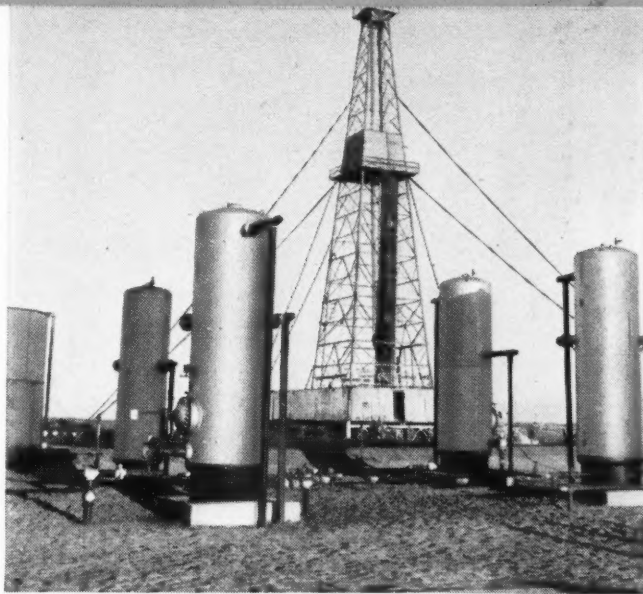
Write for Catalog and Prices
INGERSOLL STEEL DIVISION
BORG-WARNER CORPORATION
New Castle, Indiana
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

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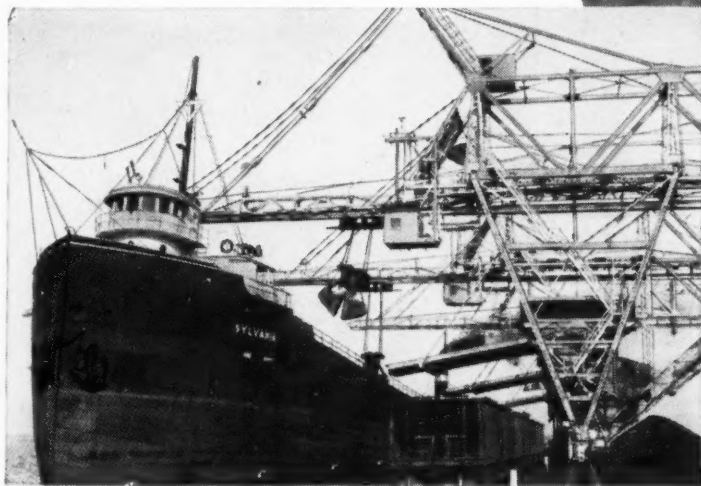
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Improved Performance with **LAY-SET** PREFORMED



"Make hole" deeper—faster—is the demand in the oil fields. The deeper the hole goes, the greater the weight of drill pipe and tools. The faster it goes, the greater the shock loads in pulling and running in pipe. Hazard makes **LAY-SET** Preformed in Seale construction, with tough improved plow steel wires, and an independent wire rope core. **LAY-SET's** improved performance makes it **THE** rope for deeper, faster drilling.

The powerful "cat" and ravenous carrier-scraper cut down hills and fill in valleys. They make modern roads, airports, dams, and industrial sites—yes, even remove overburden in strip mining operations. Hazard's **LAY-SET** Preformed Streamlined Scraper Cable is designed for the tortuous sheaves and reverse bends that prove the quality of the rope. It will improve the performance of your equipment.



Coal and ore bridges hurry to load and unload ships and cars. The wire ropes travel fast as the 5, 10, 15-ton load speeds from ship to shore. Ropes whip. Quick starts and short stops mean extreme shock loads. Sharp steel edges mean cutting and abrasion. Tough conditions, but Hazard's **LAY-SET** is made in the right constructions for bridges. You can get the exact ropes that will improve performance and serve you best.

Whatever the field — logging, mining, building elevator, contractor, industrial, marine, or oil — Hazard wire ropes give you improved performance.

ACCO

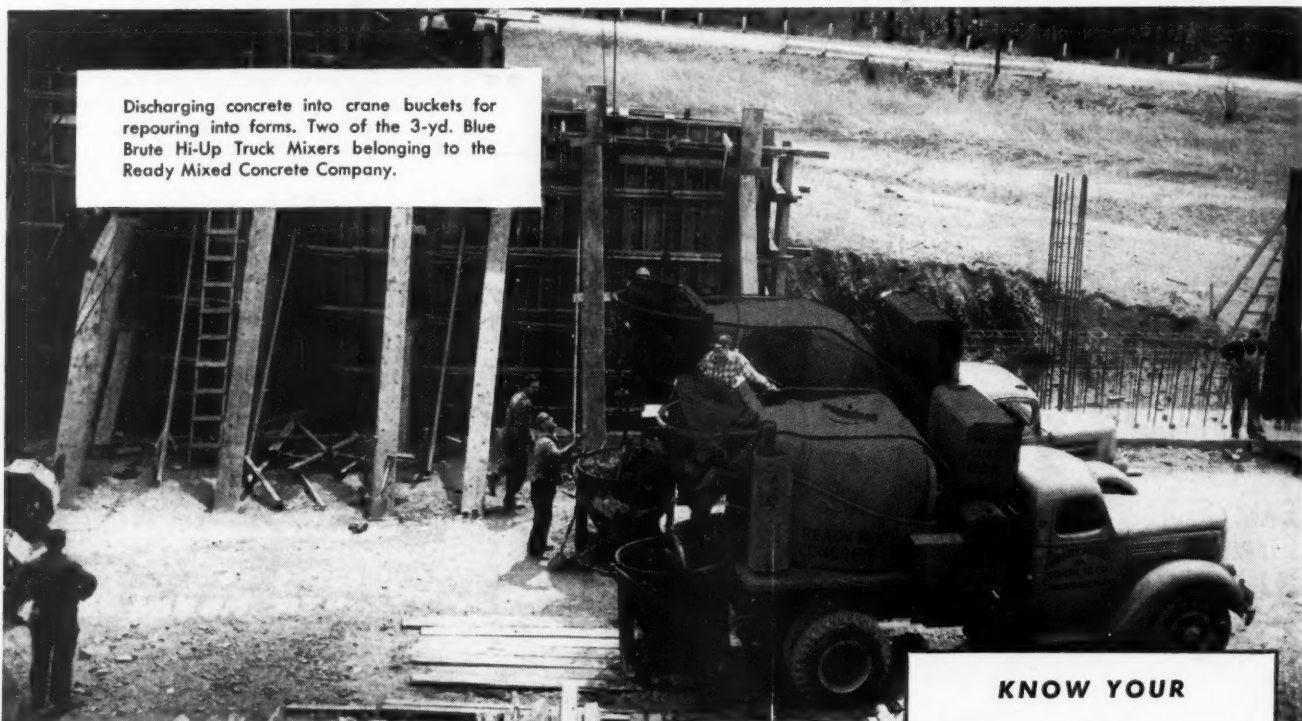
Ask your distributor for **LAY-SET** Preformed, Green Strand Wire Rope
In Business for Your Safety



HAZARD WIRE ROPE
A DIVISION OF AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.

HI-UPS HELP BUILD THE NATION'S HIGHWAYS



Discharging concrete into crane buckets for repouring into forms. Two of the 3-yd. Blue Brute Hi-Up Truck Mixers belonging to the Ready Mixed Concrete Company.

In every section of the country Blue Brute Hi-Up Truck Mixers are playing an important part in much needed highway construction. At Clinton Point, N. J., for example, these Blue Brutes are at work on a highway underpass and bridge on Route 28.

Owned by the Ready Mixed Concrete Company of Annandale, N. J., the Hi-Ups are carrying a total of approximately 5,000 cu. yds. of concrete to complete this job . . . and providing efficient, economical transport mixing with features like the following:

Ransome's exclusive mixing action . . . quick-charging hopper

with non-jamming sealing door . . . simplified, trouble-free water system . . . simplicity of design with working parts easily accessible . . . and engineered flexibility that eliminates working strains.

Proved ability to mix better concrete at lower cost has made Blue Brutes familiar sights on highway and other big construction jobs of every type. It will pay you to learn how these Blue Brutes can help you save money and beat schedules. Get the whole story from your nearby Worthington-Ransome Distributor, or write for Bulletin 221.

RS-2

KNOW YOUR

BLUE BRUTES

Your Blue Brute Distributor will be glad to show you how Worthington-Ransome construction equipment will put your jobs on a profitable basis.

RANSOME EQUIPMENT

Pavers, Portable and Stationary Mixers, Truck Mixers, and Accessories.

WORTHINGTON EQUIPMENT

Gasoline and Diesel Driven Portable Compressors, Rock Drills, Air Tools, Self-Priming Centrifugal Pumps and Accessories.

WORTHINGTON

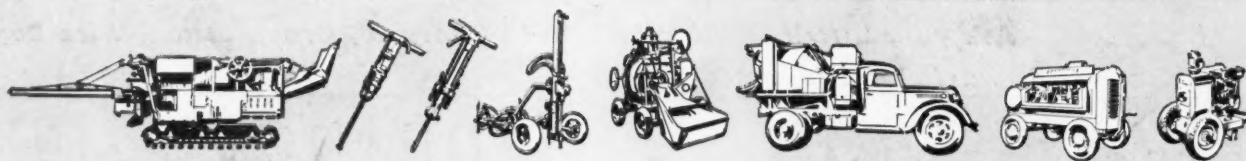


Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Mass.

Distributors in all principal cities



BUY BLUE BRUTES



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB